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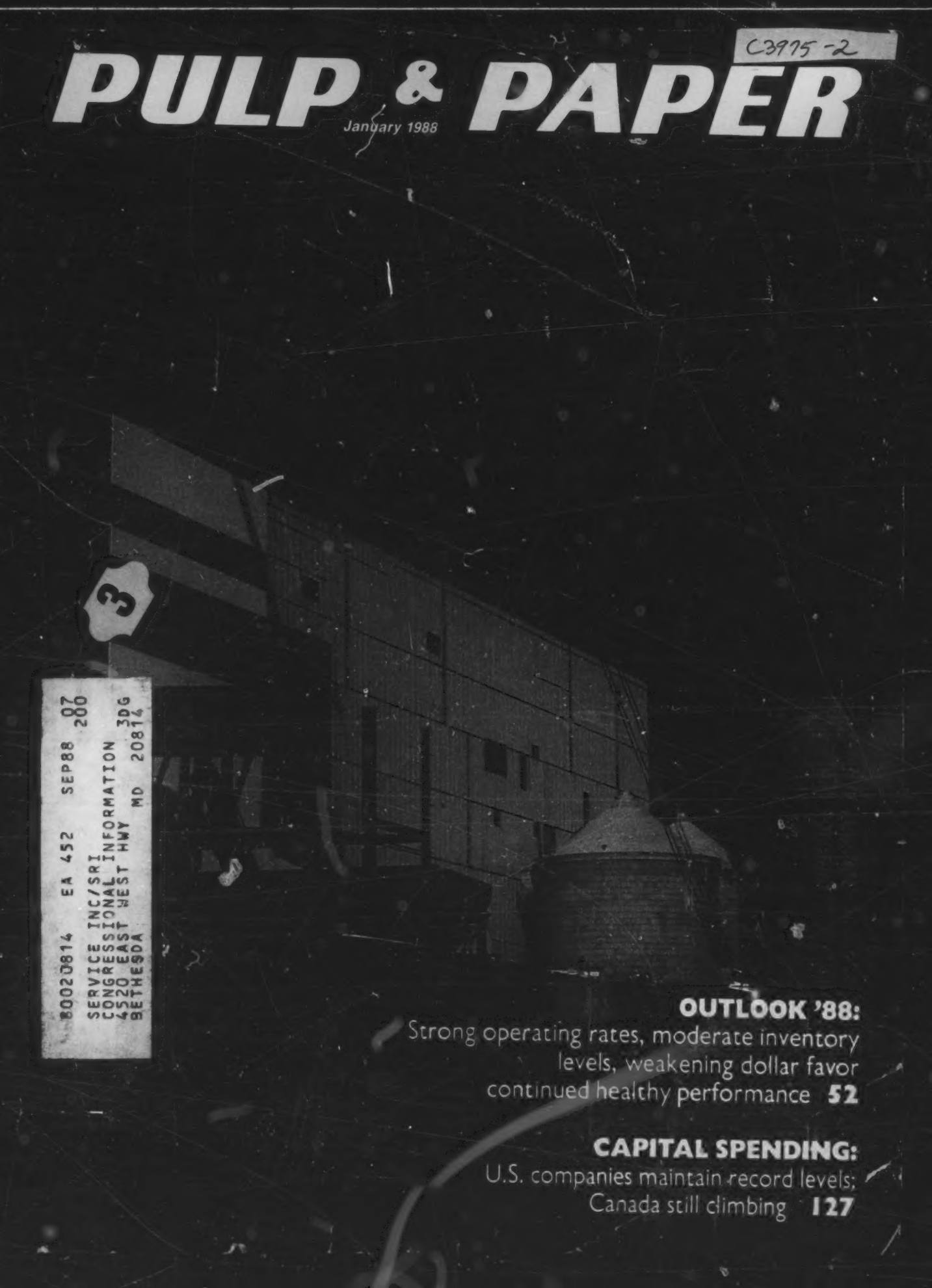
PULP & PAPER

January 1988



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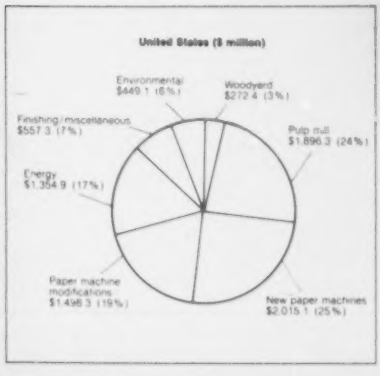

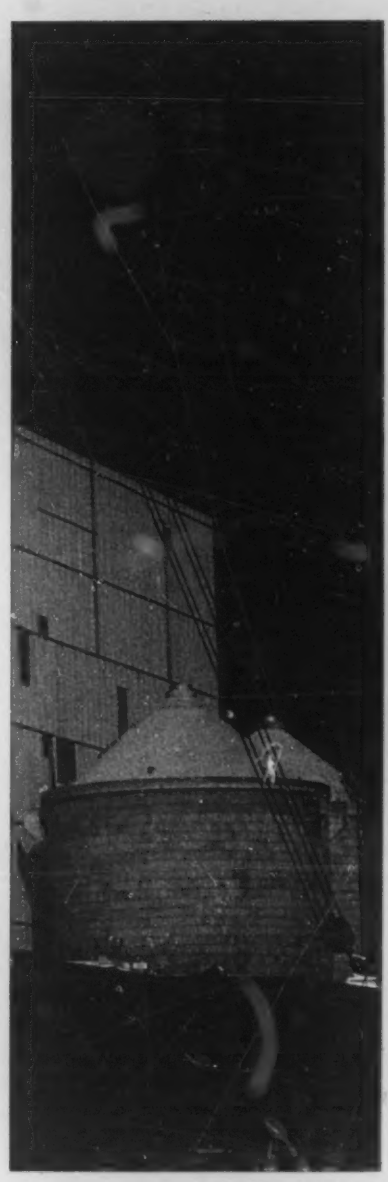

THE COVER

New Millar Western bleached CTMP market pulp mill at Whitecourt, Alta., nears completion, with startup set for this summer. Story begins on p. 80. (Photo courtesy of Castagne Communications.)

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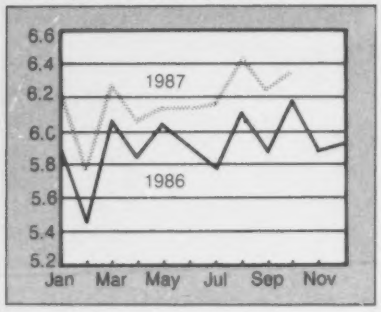
MONTH IN STATISTICS

U.S. paper and board production



U.S. production of paper and paperboard totaled 6.3 million tons in October, up only 2.7% from the previous year, according to American Paper Institute data. The relatively modest increase reflects a change in the seasonal production pattern of some paperboard grades, including containerboard. Because of changes in labor contracts, mills took downtime for maintenance and repair in October that in previous years would have been taken in July, according to API. After adjusting for these seasonal factors, production in October was still at a record annual rate of 73.8 million tpy, up 4.8% from a year earlier.

Among major grades, communication papers continued to lead the paper sector. Printing and writing production was up 5.3% through October, led by a 9.5% increase in coated paper. Containerboard production for domestic use was up 7.6% for the first ten months, and the Fibre Box Assn. reported another record month for box shipments, up 4.4% through October.

Canadian newsprint shipments totaled 811,000 metric tons in October, down 0.6% from the previous year, the Canadian Pulp & Paper Assn. reported. Market pulp exports were also off, dropping 1.7% to 655,000 tons. ■

		Latest month (000 short tons)	% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
PAPER & PAPERBOARD PRODUCTION[1]					
Newsprint	Oct.	508	8.3	5,833	3.7
Uncoated groundwood (s)	Oct.	121	-11.7	1,518	-1.2
Coated paper (s)	Oct.	588	3.2	6,810	9.5
Uncoated free sheet (s)	Oct.	962	2.4	10,931	4.7
Other printing/writing	Oct.	117	-1.7	1,380	-1.6
Total packaging and other paper (s)	Oct.	435	0.0	5,059	-1.3
Tissue	Oct.	459	1.1	5,279	3.5
Total paper	**Oct.**	**3,189**	**2.1**	**36,810**	**3.9**
Unbleached kraft paperboard	Oct.	1,566	3.6	18,863	6.9
Semichemical medium	Oct.	474	3.5	5,637	4.8
Bleached paperboard	Oct.	365	-0.8	4,414	3.2
Recycled paperboard	Oct.	755	5.0	8,577	5.5
Total paperboard	**Oct.**	**3,160**	**3.4**	**37,496**	**5.8**
Total U.S. paper and paperboard output	**Oct.**	**6,349**	**2.7**	**74,308**	**4.8**
PULP, WASTEPAPER & FIBER[2]					
Total U.S. woodpulp production	Sept.	4,919	5.5	59,395	4.7
Market pulp production	Sept.	680	8.5	8,087	7.4
Wastepaper consumption at paper/board mills	Sept.	1,488	7.8	17,583	5.7
Pulpwood consumption (cords)	Sept.	7,856	6.7	93,865	3.3
CONVERTED PRODUCTS STATISTICS[3]					
Corrugated box shipments (billion ft²)	Oct.	27.647	1.4	251.008[6]	4.4
Containerboard inventories at U.S. box plants and mills	Oct. 1	2,421	6.7		
INTERNATIONAL TRADE[2]					
U.S. paper imports (including products)	Sept.	1,092	17.3	12,408	7.8
Imports of Canadian newsprint	Sept.	739	12.8	8,641[6]	4.0
U.S. paper exports (including products)	Sept.	434	11.3	5,231	15.1
Exports of unbleached kraft linerboard	Sept.	161	-15.3	2,256	10.2
Exports of woodpulp	Sept.	442	-3.3	4,888	8.1
Norscan pulp inventories[4]	Oct. 31	875	-3.0		
Norscan pulp operating rates[4]	Oct.	98%	94%	100%	98%
CANADIAN STATISTICS[5] *(reported in metric tons)*					
Total newsprint shipments	Oct.	811	-0.6	8,068[6]	4.2
Operating rates	Oct.	97%	97%	97%	93%
Inventories held by U.S. consumers	Oct. 31	1,442	3.6		
Other paper/board shipments	Oct.	571	3.6	5,321	5.7
Woodpulp shipments (export only)	Oct.	655	-1.7	6,642	3.0
Operating rates	Oct.	91%	96%	95%	91%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fibre Box Assn., Paperboard Packaging Council. 4. North American/Scandinavian paper-grade market pulp. 5. Canadian Pulp & Paper Assn. 6. Not annualized. (s) = Shipments.

Kraft linerboard: Favorable outlook exists even if U.S. economy slows down

Grade structure: Unbleached kraft linerboard is made in a wide range of basis weights. Standard weight in the U.S. is 42 lb/1,000 ft², but other important weights are 26 lb, 33 lb, 69 lb, and 90 lb/1,000 ft². Major use is in domestic corrugated container production, although about 13% of output is exported. Specialty grades include mottled white, solid white, and wet strength-treated board. Recycled linerboard production has grown close to 500,000 tpy, but it is not included.

Production: U.S. linerboard production rose about 6.6% to nearly 17.5 million tons in 1987, helped by strong corrugated box shipments and healthy export demand. Corrugated box shipments last year, up almost 4%, significantly outpaced U.S. industrial production.

Export shipments rose about 8% to 2.35 million tons, and they would have probably been even stronger except for supply constraints. Shipments have been strongest to Asia (particularly China), but they declined to Europe. U.S. linerboard producers ran at 99% of capacity in 1987, and activity was still strong at yearend with little sign of slowdown. Inventories of containerboard at box plants and mills on Nov. 1 dropped to 2.26 million tons—equal to 5.0 weeks of supply, an uncomfortably low level.

Capacity trends: The pace of linerboard capacity growth began to pick up in 1987 in response to the strong market conditions. According to the latest American Paper Institute survey, capacity jumped 3.1% last year. All growth is coming from incremental capacity expansion and the swing of capacity from kraft paper. Unbleached kraft paper has been under strong competitive pressure from plastic in the grocery bag and sack market, and last year total shipments declined about 7%. The API survey projects linerboard capacity will rise 2.1% in 1988, but the estimate has been adjusted to 2.8% growth in *P&P*'s forecast based on at least another 100,000 tpy of kraft paper swinging to linerboard. This would result in about 120,000 tons of additional linerboard capacity because of higher basis weights.

Only one 350,000-tpy machine has been announced by Gaylord Container Corp. for startup in 1990. Some analysts have said that a price of more than $450 is needed to justify a new linerboard mill. However, the rate of capacity expansion will probably accelerate if prices rise much higher. Profitability of U.S. linerboard mills is currently high (roughly $100/ton pretax). This reflects two years of rising prices and relatively stable variable costs for pulpwood, energy, and labor.

Future outlook: Corrugated box shipments are forecast to rise about 1.7% to a new record in 1988. This is based on a mildly pessimistic forecast of 1.2% growth in real GNP and 2.0% growth in industrial production.

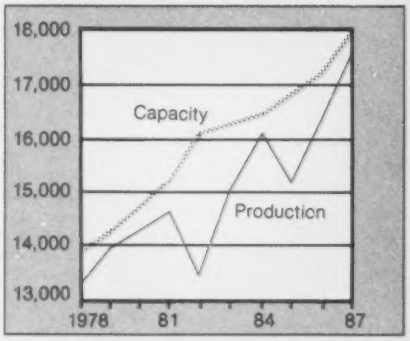
Export shipments, forecast to be up 6% to 2.5 million tons, are expected to help take up any slack that develops in domestic demand. Shipments could be higher if domestic demand weakens, since the declining dollar has given U.S. producers a strong competitive advantage in Europe and Japan.

Inventories at box plants and mills are expected to rise about 100,000 tons from their currently low level. As a result, total linerboard production is forecast to rise 2.5% to 17.9 million tons. Based on the adjusted capacity base, this would result in an operating rate of about 98%. Even if a moderate recession were to develop, operating rates would still be in the mid-90% range, which would be a relatively tight market.

Pricing: Linerboard producers are expected to try for a first-quarter domestic price increase. The move was led off in mid-December by International Paper Co., which announced a $30/ton increase to $410 for 42-lb linerboard effective Feb. 1. The increase will probably be the only one announced in 1988 and follows two $30/ton price hikes in 1987. Whether the increase holds will depend on the strength of the first-quarter domestic economy and resistance to further increases in corrugated box prices.

(Historical year-end prices for 42-lb linerboard delivered in the eastern U.S. open market are: 1987, $380; 1986, $320; 1985, $250; 1984, $350; 1983, $290; 1982, $250. For detailed price histories, see *P&P PriceBook 2*).■

SUPPLY/DEMAND (000 tons)



FORECAST (000 tons)

	1986	1987e	1988e
Production	16,402	17,490	17,935
Capacity[1]	17,175	17,704	18,190
Utilization rate	95.5	98.7	98.5
Imports[2]	78	78	80
Exports[2]	2,177	2,360	2,500
Apparent U.S. consumption	14,303	15,208	15,515
lb/capita	118.4	124.7	116.1
GNP ratio	3.85	4.00	4.01

e = Estimate.
1. Latest American Paper Institute survey (1988 adjusted for additional capacity swing from kraft paper).
2. Dept. of Commerce.

TOP U.S. PRODUCERS (000 tpy)

	Annual capacity	Market share (%)
1. Stone Container	2,510[1]	14.2
2. International Paper	1,665	9.4
3. Weyerhaeuser	1,420	8.0
4. Union Camp	1,270	7.2
5. GN Nekoosa	1,145[2]	6.5
6. Georgia-Pacific	1,135	6.4
7. Temple-Inland	1,120[3]	6.3
8. Jefferson Smurfit	845[4]	4.8
9. Willamette	740[5]	4.2
10. Pack. Corp. Amer.	695	3.9

Market share of top five companies:
45.2%

Market share of top ten companies:
70.9%

Total U.S. capacity (1987):
17,704 million short tons

1. Includes 49% interest in Seminole Kraft Corp. (176,000 tpy linerboard).
2. Includes Owens-Illinois Inc.'s 340,000-tpy Valdosta, Ga., mill.
3. Includes 910,000-tpy Rome, Ga., mill from dissolution of Georgia Kraft Co.
4. Includes 50% of Container Corp. of America (555,000 tpy).
5. Reflects conversion of machine and shutdown of another at Albany, Ore.

Orders for dyestuffs strong; price increase likely

Consumption. Following another positive growth year in paper and paperboard production, dyestuff suppliers enjoyed greater sales in 1987. The market expanded by 5% or more across all grades that use colorants. Figure 1 shows the breakdown of paper tonnages that were colored last year. Suppliers are predicting similar upward movement in consumption for the industry in 1988. Most believe dyestuff use along with paper production will follow the GNP (2% to 3%), barring an economic recession.

Some definite trends have evolved over the 1980s regarding dye application. Delivery and handling systems have changed, as more paper mills move away from chemical preparation systems that drain resources. Power dyes are less expensive, but many have found that liquid systems offer more flexibility. One area proven to be advantageous for liquid products is in the size-press coloring of uncoated free-sheet grades. It has been determined at some large machines that a combination of liquid cationic direct dyes added internally and liquid acid dyes applied at the size press afford high quality (brightness, uniformity) at a significant cost advantage over a system using 100% internal addition.

Quality is still a point of emphasis at mill sites. Process control devices are able to identify system problems accurately, and availability of additives must be completely open. This is another reason for liquid handling systems. Developments of alkaline papermaking have had great influence on dyestuff application, and most suppliers have responded with better, but more expensive, products. BASF Corp. has found through mill trials that benefits are evident from switching from anionic dyes to cationic dyes during an alkaline papermaking conversion. Cationics produce superior shade reproduction, clear whitewater (minimizing effluent staining), and complete dye exhaustion (when added at the fan pump).

Among paper grades, tissue and toweling products remain the largest consumers of dyestuffs. One source noted that deco inks are displacing solid colors and that in the European market, deep shades are being used in specialty tissue. A study of West Coast consumer tissue and towel products established definite trends in colored production (20% of facial, 50% of napkin, 13% of towel, and no true trend in toilet). In fine papers, approximately 10% across categories are colored. In groundwood grades, directory papers are using more dye for special consumer end uses. Newsprint is not a significant growth area, as many major newspapers already feature colored sections on sports, science, etc., and many are in decline. Colored inserts are also at a saturation level. Groundwood producers mentioned that new colored production is sometimes only available during industry downturns, as machines are then available for special orders. In board grades, school construction papers are flat because of a decreasing number of primary school enrollments.

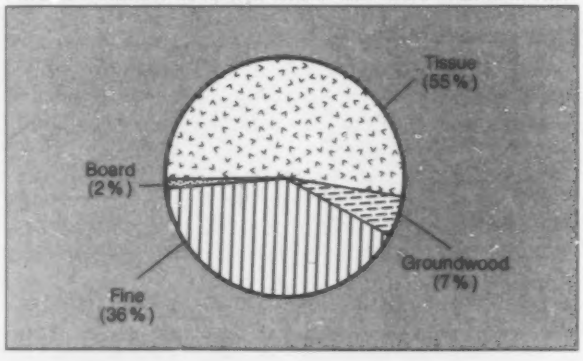
Price, availability. Profits were good for major suppliers of dyestuffs. The paper industry is second only to the textile industry in dyestuff consumption. Many companies plan product introduction within and beyond their product lines.

Crompton & Knowles Corp., the largest U.S.-based firm, operates four plants in the East. Last year's introduction of three new liquid products helped fill out the line. Several products are in the pipeline for 1988. Hilton-Davis, another domestic supplier, has decided to drop its paper business.

European chemical giants dominate the marketplace. BASF will introduce a complete range of liquid dyes for size press and calender applications (called Anthosin). Sandoz Chemical Corp. plans more cationic direct dyes, but sales emphasis will be on a new class of retention and drainage aids in 1988. Mobay Corp. will release a line of pigment dispersions offering exceptional light fastness and properties for graphic arts markets. Two cationic bleachable turquoise dyes sold last year will be added in 1988.

All suppliers commented on the high probability of price increases. Because the majority of chemical intermediaries used to manufacture dyestuffs are imported, upward price movement is inevitable. The low dollar fluctuations are causing sources to "dry up" (as one person reported), and slowdowns among U.S. formulators will result. Prices will rise at least 8% to 10% for most products. It is also believed that the glut of obsolete products hampering market expansion has now disappeared, allowing growth of the dedicated suppliers to this industry.

FIGURE 1: **Almost 1.5 million tons of fiber were colored in 1987.**



U.S. PAPER INDUSTRY SHOULD PERFORM FAIRLY WELL EVEN IF ECONOMY SLOWS

High current operating rates, moderate inventory levels, and strong cost advantage due to weak dollar are reasons for optimism

The paper industry's record production volume and operating earnings in 1987 will be followed by slightly lower achievements in 1988 as a result of a slowdown in the economy, according to financial analysts, paper company officials, and industry observers responding to *Pulp & Paper*'s annual survey.

The recent convulsions in the financial markets have already reduced consumer confidence, but lower stock prices alone are not likely to cause a recession. In fact, since World War II only about half of the severe stock market declines have been followed by recessions. In the other half, government policymakers heeded Wall Street's warnings.

At present, there are serious concerns about U.S. budget and trade deficits, the falling value of the dollar, and outright trade protectionism, but most analysts and industry people believe there is still time to change course and avert the consequences of an economic recession.

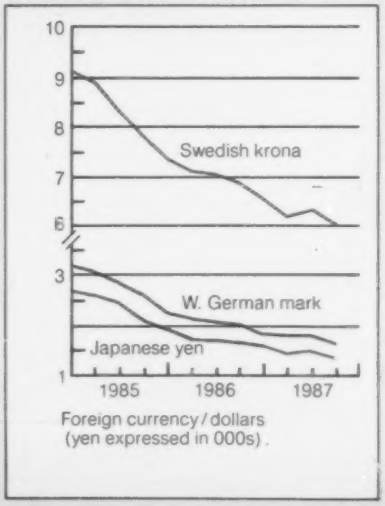
Outlook '88 was prepared by Pulp & Paper *news staffers Noel DeKing in New York and Regina McGrath, Debra Garcia, Rob Galin, and Will Mies in San Francisco.*

STRONG INDUSTRY. With this background, it is important to keep in perspective fundamental strengths of the paper industry compared with other basic industries in the U.S. "The paper industry is in a strong position to withstand a recession in 1988," asserts Mark Kurland of Mabon, Nugent & Co., "and it is in a stronger comparative cost position than it has ever been in the past 15 years."

Indeed, the current scenario is certainly less bleak than the situation the industry faced prior to the last economic downturn in 1982. Over the past several years, the paper industry has substantially cut its unit costs, reduced overhead, and improved productivity. The 95% operating rate reported in 1987 is also an improvement on the severe overcapacity situation which the industry experienced in the early 1980s.

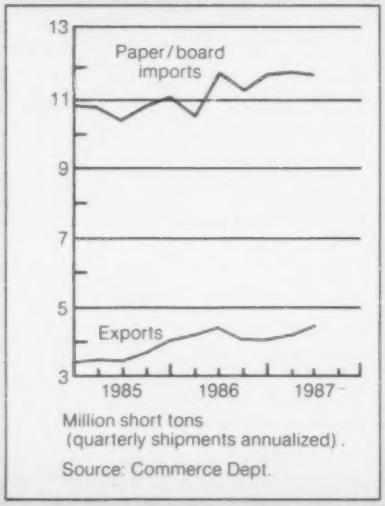
With most observers anticipating some weakness in the economy in 1988, forecasts of pulp, paper, and paperboard production are justifiably conservative. Growth in paper and paperboard production is expected to track the predicted growth in real gross national product (GNP), between 1% and 2%. This would represent a significant decline from 1986's gain of 6% and 1987's gain

The decline of the dollar against other currencies . . .



Foreign currency/dollars (yen expressed in 000s).

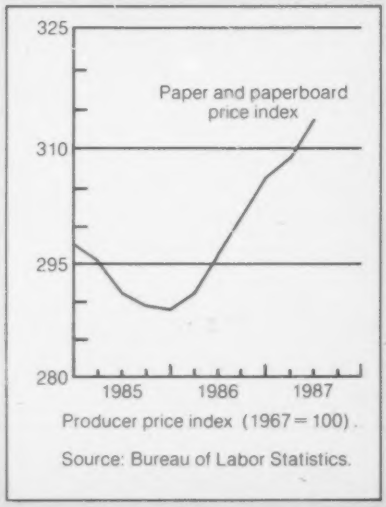
. . . boosted U.S. paper exports and slowed imports . . .



Million short tons (quarterly shipments annualized).

Source: Commerce Dept.

. . . helping to lift prices in the U.S. market.



Producer price index (1967 = 100).

Source: Bureau of Labor Statistics.

of 4%, but industry output could still reach a record 75 million tons.

On the supply side, most companies expect to proceed with the capacity expansions and capital improvement projects already planned for 1988. Some adjustments to long-term plans may come near the end of the year if the "crisis of confidence" plaguing the financial markets lingers on. "The recent erratic behavior of financial markets includes a degree of uncertainty about the outlook for the economy, but with so many economic fundamentals looking very strong, we are proceeding with the strategic plans we've put in place," says Burnell Roberts, chairman and CEO of Mead Corp.

Total industry capacity is expected to increase 2.3% in 1988, but this is likely to result in operating rates below the mid-90% level, given the more conservative outlook for production. Capacity is expected to increase 2.6% in 1989 and 2.8% in 1990. The net addition of 6.1 million tons over the next three years will bring capacity for paper and paperboard to 84.1 million tons in 1990.

Paper and paperboard prices are expected to increase in 1988, mostly due to the carryover from 1987 increases. "We expect some increases early in 1988 before a slowdown in the economy becomes evident, but by the end of the year, there could be some rollback," predicts Thomas Farrell of Deutsche Bank Capital.

Earnings are also expected to rise in 1988, even though the economic environment will turn down. For example, Roger W. Stone, chairman and chief executive of Stone Container Corp., expects his company to establish record sales and earnings in 1988 "despite the recent turmoil in the financial marketplace."

Lawrence Ross of Paine Webber points out that a positive factor for the 1988 earnings outlook is the fact that the corporate tax rate is scheduled to decline by 6% to 34%, which will be one of the lowest rates among industrialized countries. "For a company paying the 40% corporate rate in 1987, the tax rate change alone adds 10% to earnings in 1988," comments Ross.

Interest rates may be unchanged from current levels, which are down slightly as a result of an accommodative monetary policy pursued by the Federal Reserve. Many analysts expect the policy to remain intact during this election year. Despite the good news about interest rates, housing starts appear headed for a significant decline, according to David Seiders of the National Assn. of Home Builders. He predicts that nationwide housing starts this year will be just 1.45 million units, compared with about 1.64 million in 1987. "Housing demand will be adversely affected by an erosion of both household wealth and confidence in the economy, although we are not anticipating a severe short-term shock to buying plans," Seiders says.

FEWER ACQUISITIONS. The pace of mergers and acquisitions in the paper industry will subside in 1988, since most of the major restructuring in the industry has already occurred, and the time has come to pay the

TABLE 1: **Analysts' projections for 1988.**

Percentage change from 1987 levels
(unless otherwise indicated)

	Growth in real GNP	Paper/board production	Operating rates[1] Paper	Operating rates[1] Paperboard	Prices	Costs per unit output[2]	Earnings Paper	Earnings Forest products	Housing starts[3]
George Adler Smith Barney	2.5	1.9	92.9	96.6	15.0	2-3	30	20	1.53
Evadna Lynn Merrill Lynch	1.4	1.7	94.1	94.5	11.5	2.5	17	14	1.44
Mark Rogers Prudential-Bache	1.0	0.9	92.1	93.7	4.1	3.2	11	10	1.7
Lawrence Ross Paine Webber	1.8	1-2	93.0	95.0	5.0	3.0	10-15	5-10	1.4
Sherman Chao Salomon Brothers	1.5-2.5	2.0-2.5	93.0	95.0	6.0	2.0	25	(20)	1.4-1.5
William Wigder First Boston	0-1.0	1.8	92.0	96.0	3.0	3.0	15	(15) - (20)	1.45
Chad Brown Kidder Peabody	2.3	3.3	94.2	97.4	8.0	3.5	30	25	1.45
James Wei Tucker Anthony	2.0	3.0	94.0	99.0	13.0	5.0	34	20	1.5
Tom Clephane **Jeanne Carroll** Morgan Stanley	0.5	0.8	92.5	94.2	4.2	3.5	8	(25)	1.4
Average	1.6	1.9	93.1	95.7	7.8	3.1	20	5	1.48

1. Production as percent of capacity. 2. Weighted for full year. 3. Millions of units.

TABLE 2: **U.S. industry operating rates by grade.**

Paper	Operating rates (%) 1984	1985	1986	1987e
Newsprint	94.7%	93.8%	97.0%	97.7%
Uncoated groundwood	91.8	89.0	91.4	86.9
Coated paper	95.3	88.2	92.9	92.1
Uncoated freesheet	91.0	92.2	94.4	94.3
Bristols	91.9	87.8	96.6	96.9
Thin paper	89.6	80.4	79.2	73.8
Cotton paper	81.2	77.0	79.2	82.7
Kraft & industrial	91.8	87.0	88.9	90.0
Tissue	93.3	92.4	93.1	93.2
Total paper percent	92.8%	90.5%	93.2%	93.1%
Paperboard				
Linerboard	96.8%	90.7%	95.5%	99.0%
Other	90.4	84.3	88.9	94.8
Total	96.4%	90.2%	95.0%	98.7%
Semichemical	98.4	94.0	96.7	99.8
Bleached board	96.7	90.3	93.3	94.7
Recycled	87.6	86.8	89.7	92.1
Total paperboard percent	94.6%	90.0%	93.8%	96.8%
Total paper and paperboard percent	**93.7%**	**90.2%**	**93.5%**	**95.0%**

e = Estimates.
Source: American Paper Institute.

TABLE 3: **U.S. paper/paperboard production (000 short tons).**

Paper	1984	1985	1986	1987e
Newsprint	5,539	5,428	5,630	5,803
Uncoated groundwood	1,565	1,521	1,540	1,526
Coated paper	6,249	5,875	6,263	6,784
Uncoated freesheet	9,152	9,690	10,410	10,863
Bristols	966	930	990	986
Thin paper	303	262	247	228
Cotton paper	147	144	152	162
Kraft & industrial	5,586	5,204	5,117	5,034
Tissue	4,921	4,941	5,095	5,253
Total paper	34,428	33,995	35,444	36,639
Percent change	5.0%	(1.3%)	4.3%	3.4%
Paperboard				
Linerboard	16,038	15,183	16,402	17,531
Other	1,147	1,185	1,287	1,340
Total	17,185	16,368	17,689	18,871
Semichemical	5,169	5,088	5,376	5,631
Bleached board	4,048	3,948	4,271	4,426
Recycled	7,637	7,630	8,083	8,523
Total paperboard	34,039	33,034	35,419	37,452
Percent change	5.8%	(2.9%)	7.2%	5.7%
Total paper and paperboard	68,467	67,029	70,863	74,091
Percent change from previous year	5.4%	(2.1%)	5.7%	4.6%

e = Estimates.
Source: American Paper Institute.

debts accumulated from the spending spree of recent years. "During 1987, about 40% of discretionary cash flow is being used to pay off acquisition debt, while 50% is directed toward cost-reduction projects. Only 10% is being used for new machines or mills," says Evadna S. Lynn of Merrill Lynch.

Most analysts believe that the increased concentration in the industry has been a positive development for prices and profitability, and they also believe that there will be additional consolidations in 1988. They warn, however, that the cost of future acquisitions will be substantially higher because of negative feelings toward hostile takeovers, which could change the *laissez-faire* attitude toward all mergers and acquisitions.

The rash of hostile takeovers among corporations and risk arbitrageurs in recent years created a strong backlash in the business community and prompted legislation designed to slow the trend. Federal tax provisions now apply a capital gains tax of 34% on corporate acquisitions, and a new tax proposal approved by Congress in late 1987 would disallow interest deductions on the financing used in takeovers. Equity-financed acquisitions also became more expensive following the stock market's collapse in October. This will lead to fewer and more disciplined deals in the future.

Foreign takeovers of paper companies remain attractive due to a weak dollar and lower stock prices, which have lowered the price of many American businesses to foreign buyers. "The foreigners have never had a better time than right now," says Ronald Freeman, head of mergers at Salomon Brothers.

WEAK DOLLAR. The anticipated slump in U.S. demand for paper and paperboard may be offset by diverting more production to export markets. In 1987, exports reached 14.5 million tons, an increase of 11% over 1986. The continued weakness of the dollar should be a positive factor for the major export grades of market pulp, linerboard, and bleached paperboard.

It is uncertain that U.S. producers will become price leaders in export markets since prices are traditionally set by the marginal or high-cost producer. At present, costs in Japan, Scandinavia, and Canada are higher than in the U.S. Mark Rogers of Prudential-Bache Securities describes the U.S. paper industry as "a world-dominant supplier that will become increasingly dominant over time, given the inability of our major foreign competitors to expand capacity in commodity paper products due to a lack of incrementally available woodfiber."

On the import side, Canada will account for 75% to 80% of foreign shipments to the U.S., with pulp and newsprint being the dominant grades. In 1987, imports from Canada were up 7%, but slower domestic U.S. demand in 1988 should flatten this trend.

Imports of coated printing papers from Canada, Finland, and Germany advanced strongly in 1987 due to strong demand from commercial printers. Demand for

these grades will remain strong in 1988 because of the U.S. presidential election campaign, but the lower value of the U.S. dollar will make it increasingly difficult for European coated paper suppliers to maintain their market position in the U.S. Furthermore, European demand has been booming, and prices are $100/ton higher in their home markets, according to George Petty, chairman of Repap Enterprises Inc.

Most of the analysts surveyed expect the demand for newsprint and the printing/writing grades to hold up better than the demand for the packaging grades, which will be affected by weakness in demand for consumer and industrial goods. Interestingly, paperboard operating rates are expected to exceed operating rates for the paper grades because of fewer capacity additions.

"Producers should be able to obtain further price increases for newsprint, coated and uncoated papers, and bleached board during 1988," says Evadna S. Lynn of Merrill Lynch. However, a softening worldwide demand for linerboard and resistance to higher market pulp prices as world demand stabilizes could preclude further price increases for these grades.

UNCOATED FREE-SHEET

DEMAND AND SUPPLY WILL BE IN BALANCE

■ Uncoated free-sheet producers will be able to take advantage of balanced supply and demand to improve their utilization and profits, sources predict. After a slow start, uncoated free-sheet shipments last year picked up strength in the second half and were up more than 5% for all of 1987 at nearly 11 million tons.

"I'm fairly bullish," said a market analyst for a major producer. "We really don't have any new capacity coming online until late 1988. Supplies of uncoated free are tight right now and we're looking at price increases announced for January. This should be a good year for producers of uncoated free-sheet," he said.

"Printing and writing papers are our favorite category," said Ivan Crossley, an analyst with Kidder Peabody & Co Inc. Uncoated free-sheet has the closest relationship with market pulp, and the first-quarter price increase for pulp should also spur additional paper price increases, he said.

"The big question mark is the economy," said Dana Mead, vice president-white papers business at International Paper Co. "If it holds up at a reasonable level . . . we're looking at a very good, very positive supply-and-demand picture for uncoated white. Growth of demand should be in the 3% to 4% range while supply increases 2% to 2.5%," Mead explained. "This means the market is going to continue to be pretty tight." Mead predicts the tightness will last at least through the first quarter.

The market analyst for the major paper company said there will be "at least a couple of price increases in the first half '88." This is based primarily on demand, rather than the market pulp price hikes, he said.

In fact, the American Paper Institute's latest capacity survey puts growth at just 2.3% from last year. Georgia-Pacific Corp. plans a late 1988/early 1989 startup of its 290,000-tpy paper machine in Port Hudson, La. The only other possible major addition of uncoated free-sheet capacity would come from International Paper Co., which will increase its white papers capacity by 200,000 to 300,000 tpy over the next two years. Part of this additional IP capacity will come through machine rebuilds and speedups and "de-bottlenecking" production lines, said Mead of IP. In addition, a new machine could be built at the Hammermill Paper Co.'s Riverdale mill in Selma, Ala., or elsewhere.

The January price hike will bring paper prices slightly above the high levels of 1984. "We're just trying to recoup lost ground," the papermaker said. Operating rates, he said, probably will be comparable to 1987 at about 95% to 96%. Mead agrees that utilization rates will be about the same. Resource Information Systems Inc., the Lexington, Mass.-based paper/forest products forecasting firm, is predicting 93% to 94%.

The paper company analyst said industry profitability should benefit from the moderate cost increases in recently completed and soon-to-be-completed labor contracts. The benefits of the industry's capital expenditures over the last five years also will become more evident, he said. "Our industry has been spending money to streamline the papermaking process, to make it more efficient, to reduce the amount of dollars we've got tied up in a ton of paper coming off the back end of a machine. This should be a good year not only from a shipments standpoint but certainly from a profitability standpoint."

Tight markets also will allow manufacturers to continue focusing their efforts on higher-value products, such as computer papers. Some companies, most notably International Paper, will expand their commitments to alkaline papermaking. IP recently approved construction of an alkaline sizing plant at Hammermill's Erie, Pa., mill. Other producers will continue their work with twin-wire formers for more uniform paper surfaces.

COATED PAPER

WILL THE GOOD TIMES CONTINUE?

■ Predictions for a tough 1987 proved short-lived, but some industry observers are wondering if the momentum of late 1987 can be carried beyond the first quarter of 1988.

"[This] year should be pretty much a continuation of [last] year, which has been pretty tight, with everybody running essentially full most on allocation," said Jim

Gibson, industry manager of Mead Corp.'s Publishing Paper Div.

Gibson gives a caveat, however. "There are two question marks out there. One of those," he explained, "is the effect of the stock market fall and what impact that will have on retail sales, and the carry-through effect on both advertising and direct mail. If that has a substantial negative effect, it will ripple back through the paper markets.

"The second negative," Gibson continued, "is a postal rate increase scheduled for about March or April. That looks like about a 25% increase in postal costs for third class mail, and that will have some negative effect on direct mail usage."

Jeane Mayer, manager of interindustry forecasting for Wharton Econometric Forecasting Associates, said she is not predicting a recession in 1988, but "we're definitely looking for sluggish consumer spending in the first half of '88." This will be concentrated in the durable goods sector. "Consumers in general will think twice about spending on big ticket items, such as autos and furniture," she explained.

All this translates into somewhat lower corporate profits and, subsequently, less advertising, Mayer said. This means that commercial printers, who buy much of the coated papers for product brochures and the like, will see a reduced [growth] rate, from about 8.5% annualized growth in 1987 to 5% this year.

On the other hand, periodicals and books will grow at a faster pace than in 1987, and catalogs still will do extremely well, Mayer said. This will bode well for lightweight coated (LWC) papers.

The Olympics and U.S. presidential election this year also will help the coated groundwood segment, adding about 1 million tons more demand in general—most of it coated, according to Ivan Crossley, an analyst with Kidder Peabody & Co. Inc.

Crossley is not as favorably disposed to coated free-sheet market performance. "I'm not as optimistic because of the tremendous amount of new capacity coming online in the next few years," Crossley said. "It may be more than demand can support."

Coated free-sheet capacity will be about 4.8% higher in 1988 than last year. Two new machines are coming online this year, adding 205,000 tpy at Midtec Paper Inc.'s Kimberly, Wis., mill, which will start up in the fall, and an unspecified capacity addition at Potlatch Corp.'s mill in Cloquet, Minn. The new Potlatch machine (approximately 153,000 to 167,000 tpy, according to industry sources) probably will add 60,000 to 67,000 tpy to the mill. Westvaco will add 30,000 tpy at Luke, Md., completing a five-year, 150,000-tpy expansion at the mill.

No new coated groundwood machines are scheduled for startup this year, but the full effects of the paper machines brought online in late 1986 and early 1987 will be felt in the marketplace. These machines represent more than 800,000 tons of potential capacity, and they will add approximately 2.9% more capacity in 1988. In 1989, Blandin Paper Co. is expected to start up a new 254,000-tpy paper machine in Grand Rapids, Minn. A 37,000-tpy machine will be shut down at that time.

Despite the added coated free-sheet capacity, Crossley expects the coated sector to post operating rates in the 93% to 94% range.

TISSUE

CONSUMER TISSUE PRICE HIKE AT LAST?

■ 1988 is shaping up to be the year in which producers of consumer tissue will finally succeed in passing on rising pulp and wastepaper costs with an across-the-board price hike. The hike will average about 5%, observers predict Most consumer tissue prices have not been raised since 1981, although industry observers hint that tissue producers have been liberal in taking sheet count reductions.

Volume throughout 1987 remained strong, and this is expected to be the case in 1988 as well. Production through the first nine months of 1987 was running at an annual rate of 5.25 million tons, 3.8% above year-earlier levels, the American Paper Institute reports.

The API estimates that U.S. capacity for tissue paper will expand at an annual rate averaging 1.9% over the next three years to reach a total of 5.955 million tons in 1990. Last year's capacity was 5.635 million tons, according to the API. This year, Georgia-Pacific Corp., Fort Howard Corp., and James River Corp. are expected to start up new tissue machines. The G-P machine will replace an existing machine at its Palatka, Fla., mill. There are also indications that Chesapeake Corp., which owns Wisconsin Tissue Mills Inc., is planning a major tissue expansion.

PRICE HIKE IMPERATIVE. On average, toilet tissue producers have dropped sheet counts from about 460 sheets two years ago to between 320 and 330 currently, observers indicate. Analyst Jeanne Carroll of Morgan Stanley & Co. does not think producers can reduce sheet counts any further because consumers are becoming increasingly impatient with ever-shrinking rolls.

This means a price increase is the only way for producers to get any relief from rising raw material costs. Relief is much needed. The Bureau of Labor Statistics' Producer Price Index reported that prices for converted tissue inched up about 1.1% during the first nine months of 1987 compared with the year-earlier period. During the same period pulp prices were hiked twice, and a pulp price increase was pushed through in the fourth quarter as well. Higher-grade wastepaper prices tracked pulp prices throughout the year, and the price of deinking grades also jumped.

Producers of commercial and industrial (C&I) tissue

implemented an across-the-board price increase averaging 5% effective November 1987. This followed a successful 6% price increase led by Fort Howard last spring.

PUSHING OFF SHORE. Scott Paper Co. and James River both announced major investment plans last year geared toward cornering the faster-growing western European tissue market. Scott will spend over $250 million during the next three years to expand its sanitary paper capacity in the region. Included in the plans are the installation of three new paper machines—one each in France, Italy, and Spain—as well as converting facilities and other equipment. Scott is also repositioning itself to take advantage of the fast-growing Asian market.

In a purchase it characterized as the "cornerstone for European expansion," James River bought 50% of the Kaysersberg Div. of French papermaker Beghin-Say for $243 million. Kaysersberg has capacity for about 128,000 metric tpy of household tissue and related products at three mills located in France.

CONTAINERBOARD

NO SIGNS OF SLOWDOWN

■ With mills still running full out in December, there was little sign of any slowdown in the containerboard sector in the wake of the mid-October stock market crash. "The current industry environment is one in which demand is pushing the limits of supply," Roger W. Stone, chairman, president, and CEO of Stone Container Corp., said recently.

Latest Fibre Box Assn. statistics showed corrugated box shipments in October were 1.4% higher than a year earlier, and analysts were expecting shipments for all of last year to be up nearly 4%. Inventories of containerboard at box plants and mills on Nov. 1 were at rock-bottom levels at around 2.26 million tons, representing 5.0 weeks of supply.

Linerboard mills continued to run at close to 100% of capacity into December, and total production for the year was expected to be up about 6.7% at 17.5 million tons. Export shipments have been picking up momentum, and for all of 1987 they probably totaled close to 2.36 million tons, up 8% from 1986.

DIFFERENT FROM 1984. "We certainly don't have any of the ingredients around this December like we had in December 1984 when the industry went into its nosedive," remarked Jerry H. Ballengee, senior vice president of Union Camp Corp. "Inventories are on the short side of being comfortable. In 1984, we had very high inventories and a strong U.S. dollar, which obviously is not the case as we go into 1988."

Union Camp has reduced its projections for U.S. corrugated container consumption in 1988 to reflect most economic forecasts, Ballangee noted. "However, we still see 1988 as a strong year with equal or perhaps slightly more consumption of corrugated than in 1987, which was a record year."

Ballangee said that linerboard export shipments in 1987 were probably constrained by available supply. With the continued weakness in the dollar, export demand will likely be strong in 1988 as long as the economies of major exporting countries remain healthy, he said.

WORST-CASE SCENARIO. Even if corrugated box shipments remain relatively flat due to a consumer-led recession, linerboard operating rates would still be in the 96% range, according to Thomas P. Clephane of Morgan Stanley & Co.

Although it might not be strong enough for mills to obtain another price increase projected for spring, this level of operation should at least be enough to support the $380/short ton price implemented last fall, he said. And profits of the major U.S. linerboard producers should be up 15% to 25% in 1988, mainly due to the carryover effect from price increases in the second half of 1987, he estimated.

It would take a severe 1% to 2% decline in real GNP to knock operating rates down to the 92% to 94% range at which prices might begin to weaken—and such a sharp decline in the economy is unlikely, said Clephane.

NO NEW MILLS. Linerboard producers were able to push through a $30/ton price increase to $350 in early 1987 and then a similar increase to $380 in early fall. Although the pace of capacity expansion has been picking up, price levels are still not high enough to justify major greenfield capacity expansion, according to Clephane. He estimates that a linerboard price of about $465/ton would be necessary to earn an 11.5% after-tax cash-flow return on total investment in a large greenfield mill plus related box plants, timberland, and working capital.

Only one new 350,000-tpy linerboard machine has been announced by Gaylord Container Corp. for startup in 1990. Most of the remaining capacity expansion will come from incremental projects and the swing of some kraft paper capacity into linerboard production. In its recently released survey, the American Paper Institute projects only a 2.1% increase in linerboard and a 1.2% increase in semichemical medium capacity this year.

CAPACITY SWINGS. With linerboard markets expected to remain tight in 1988, additional linerboard capacity could come from swing machines producing both linerboard and kraft paper. During 1987, about 850,000 tons or 25% of kraft paper was produced on linerboard machines.

The largest market for kraft papers, grocery sacks and merchandise bags, has been steadily losing market share to plastics at a rate of about 5%/year. Continued market

erosion is likely in 1988, and the probable consequence of this trend is the conversion of kraft paper capacity to other grades.

When machines are converted from kraft paper to linerboard, output can be increased by a factor of about 1.2. "Applying this conversion factor to 1988, when we expect a 4% drop in kraft paper output, an additional 220,000 tons becomes available for linerboard production," noted Clephane. As a result, he estimates that linerboard capacity could grow as much as 3.3% in 1988.

BOXBOARD

WEAKER CONSUMER MARKETS AHEAD?

■ Boxboard producers will have little time to enjoy the industry's strong 1987 performance as they confront reduced demand for their products in 1988. Consumer spending is likely to decline this year, and this will adversely affect the packaging grades which have contributed to the sharp upswing in bleached, recycled, and unbleached kraft paperboard production during the past two years.

Demand for bleached board was up 4% in 1987, after advancing 8% in 1986. With this positive growth trend, the industry easily accommodated Westvaco Corp.'s new 175,000-tpy SBS machine, which started production in early 1986. Both domestic and export orders surged as total consumer spending escalated and the U.S. dollar plummeted against other currencies. Paperboard milk cartons staged a revival against plastics, while paper cups and other disposables maintained a healthy share of the huge fast-food market.

Recycled board markets were also strong in 1987, and production increased by 5%. Recycled mills producing folding carton stock reported strong orders throughout the year as the price differential between clay-coated grades and solid bleached approached $200/ton, thus prompting customers to switch to lower-cost materials. Markets for gypsum linerboard, corrugating medium, and tube and can stock were also strong as the country's industrial output and construction activity escalated.

Unbleached kraft boxboard production was relatively flat in 1987. Most of the kraft board produced is used in the beverage carrier market, which has received a boost in recent years from the successful marketing of wine cooler beverages. Kraft producers anticipate additional growth by diversifying into the folding carton markets dominated by bleached and recycled grades.

TABLE 6: **Linerboard prices have been rising faster than corrugated box prices.**

	Eastern U.S. price 42-lb linerboard[1] ($/short ton)	Average U.S. corrugated box price[2] ($/1,000 ft²)
1987		
4Q	$380	n.a.
3Q	350/380	$42.86
2Q	350	42.76
1Q	350	41.20
1986		
4Q	320	39.63
3Q	310/320	38.54
2Q	280/290	38.00
1Q	250/260	37.73
1985		
4Q	250	38.14
3Q	250	38.86
2Q	275	41.35
1Q	310	42.56

1. Source: *Pulp & Paper Week*. 2. Source: Fibre Box Assn. index.

JANUARY PRICE INCREASES. Bleached board producers raised prices by $30/ton in April and $35/ton in October, raising the list price of 15-pt SBS in rolls to $660/ton by the end of 1987. Some mills phased in the October increases so that the new price would not be fully implemented until January 1988. Many analysts expect another attempt to raise prices during the first half of the year when market conditions are favorable.

In May, recycled board producers raised prices in the East by $30/ton for 20-pt clay-coated folding carton stock in rolls and $20/ton for bending chipboard grades. In August, midwestern mills raised prices for clay-coated stock by $25/ton, and they raised the price of chipboard by $20/ton. Generally, this brought prices of 20-pt clay-coated folding carton stock to about $390 to $430/ton and prices of 20-pt uncoated chipboard to $330/ton in the Midwest. East Coast prices were about 5% lower, but eastern mills announced price increases for January in order to remain competitive with midwestern mills. Meanwhile, West Coast mills were selling clay-coated grades for as much as $465/ton.

Prices of unbleached kraft board fall between the two competitive grades of SBS and clay-coated recycled. Coated kraft board has some inherent cost advantages because it is not bleached like SBS and it has a significant basis-weight advantage over recycled board. Mead Corp. and Manville Corp. are the only commodity producers of kraft board, and each company claims about 50% of the market.

Manville Corp. boosted its production capacity to 550,000 tpy when it completed a machine rebuild at its West Monroe, La., mill in late 1987. The company is also planning to rebuild an idle coated kraft board machine at the mill over the next three years, which will further increase its capacity. For its part, Mead Corp. will expand its coated kraft paperboard operations in Mahrt, Ala., with the construction of a new 350,000-tpy mill for a 1991 scheduled startup. Mead currently has production capacity of 420,000 tpy.

OUTLOOK IS CAUTIOUS. Demand for the boxboard grades is expected to be down slightly from 1987 levels. Copeland Economics Group forecasts a 1.5% decline in SBS production, a 3.5% decline in recycled board, and a 1.5% decline in unbleached kraft.

The folding carton market is expected to drop about 3%, milk cartons down 1.3%, cups down 1%, and plate and other food containers up 7%—following a 14% decline in 1987.

Gypsum linerboard production will be off 5% or more as a result of a severe drop in housing starts and other construction activity. A reduction in total industrial production will push production of tube, can, and drum stock down by at least 5%.

WASTEPAPER

GROWTH TREND TO CONTINUE

■ Paperstock markets are expected to continue to grow in 1988 as mill operating rates remain high—at least through the first half—and mills use more recycled fiber in paper and paperboard production. Exports should be boosted by the weak U.S. dollar, as well as the growth in such prime overseas markets as Rep. Korea and Taiwan. One detrimental factor affecting the market will be the expanded involvement of municipalities in recycling.

Mandatory and voluntary municipal recycling programs are expected to cause a glut of wastepaper in the coming years. This will particularly affect old newspapers, and it also may have a significant effect on old corrugated containers. Both are the chief postconsumer grades of recyclable paper. The disposal of office papers could also be controlled, although this has not been as well accepted as it has with the bulk grades.

Mandatory recycling appears to be spreading both in the U.S. and Canada. In the U.S., New Jersey last year implemented the nation's first statewide recycling bill, which requires residents to separate their refuse for collection. In Canada, the city of Ottawa last year joined Mississauga and Kitchener as Ontario's online cities. Toronto, which has operated a voluntary program, will start mandatory recycling shortly.

For some time, collections of recyclable materials in Europe have glutted the market there and caused prices to drop. Until the fourth quarter of last year, the European market continued to flounder. Then in October, reports indicated that the market had bottomed out and was even strengthening in some countries. OCC and high-grade prices were up in France; the U.K. market was in balance, and moderate price increases in Fed. Rep. Germany were attributed to a reduction in the collections of wastepaper. Wastepaper consumption in Italy rose slightly, resulting in some success at raising paperstock prices by 5% to 15%.

U.S. collections of recyclable paper were expected to reach an all-time high in 1987, with a projected domestic consumption level of 19 million short tons and an export level of 4.2 million tons. This year, market observers expect U.S. paperstock exports to reach 4.5 million tons or more. Though U.S. paperstock dealers will find it more difficult to keep prices up for the lower grades as municipalities bring in additional fiber (especially in the lower grades), the outlook for 1987 remains good due to projected strong demand from consumers worldwide.

HIGH RUNNING RATES. One observer indicated that U.S. mills should run well in 1988, at least for much of the year. This includes tissue mills, which use more of such grades as white and colored ledgers and coated book stock, as well as pulp substitutes. Linerboard mills should be operating at near-capacity levels, boosting demand for OCC and new double-lined kraft corrugated clippings. At the same time, the strength in pulp markets will cause pulp substitute prices to reach record levels.

One grade that may slacken off a bit is computer printout, due to the problem with deinking laser printing. Although some companies claim to have the technology to take out laser printing, mills appeared to be reluctant to trust the new technique. Perhaps in the coming year or two, these technologies will be proved. Others who have not already found ways to incorporate laser-printed CPO in their stock may do so. Some now mix the contaminated material in with other fiber and use it in inner layers of paper and board.

The trend toward increasing the portion of recycled fiber used in making paper and board, especially for such grades as corrugated medium, linerboard, and newsprint, should boost demand for paperstock in the coming years. With these three paper and board grades expected to remain in good demand in 1988, secondary fiber demand should also remain high. In addition, several companies will be building greenfield mills using secondary fiber over the next three years.

SUBS FOLLOW PULP. Most market observers do not expect the U.S. economy to turn down until sometime after mid-year, possibly not until 1989. The consensus calls for strong markets in the first half of 1988, with weakening in the second half. In the first quarter, pulp substitute prices should go up again, following another hike in woodpulp.

At the same time, OCC and DLK demand and prices should also turn around as mills that stopped buying in the fourth quarter start to rebuild inventories, particularly overseas. Old news demand will be helped by strong newsprint markets, although the biggest jump in consumption will occur in 1989 as greenfield mills get ready to start up.

Paperstock exports are expected to continue to increase due to growing demand from developing countries, especially those in the Pacific Rim. The American Paper Institute expects total U.S. exports of wastepaper in 1987 to top 1986's record 3.7 million short tons by 600,000 tons. Of this, 2.7 million tons is expected to go to such key Southeast Asian countries as Rep. Korea and Taiwan.

CANADIAN INDUSTRY

TRADE POLICY, STOCK MARKETS, AND RECESSION FEARS DAMPEN PROSPECTS

Canadian pulp and paper companies are facing more uncertainty in 1988 due to changing government policies, slower world economic growth, and major labor bargaining. Following a generally favorable climate in 1987 that saw prices and profits soar, this year is broadly being labeled a "correction period" for markets that may have risen too far and fast over the past 12 months.

As with the sharp escalation in stock prices, the profit margins for such key Canadian industry grades as newsprint and pulp skyrocketed during 1987. In 1988, however, the performances of these commodities may slow down and even stall later in the year. The risk of a recession this year has increased because of the stock market's decline in the last quarter of 1987. Yet earnings overall should be relatively good for the year, as any downturn is not expected to show up in the quarterly results until late in the year.

Capital spending by the Canadian pulp and paper industry is expected to be up sharply in 1988. However, the recent decline in stock prices could make financing more difficult to obtain, perhaps causing delays in some projects, according to Ross Hay-Roe, editor of *PaperTree Letter*.

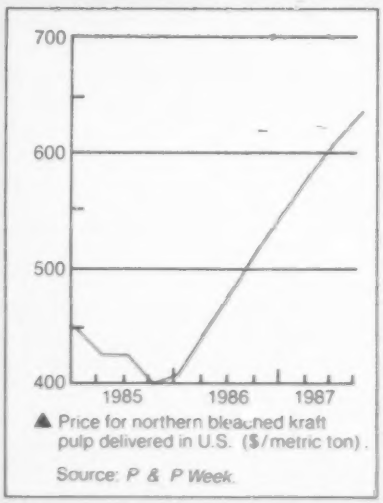
Foreign investment in the Canadian pulp and paper industry will probably increase this year, with at least two Japanese companies studying major projects in western Canada. One of these, Oji Paper Co. Ltd., in late December announced it was forming a venture with Canfor Corp. to acquire and then significantly modernize and expand the latter's Port Mellon, B.C., pulp mill in a C$635-million program. Daishowa Paper Manufacturing Ltd. is also studying possible new market pulp mills for Alberta and British Columbia.

FREE TRADE AGREEMENT. The Free Trade Agreement being worked out with the U.S., Canada's largest trading partner, is not likely to have much effect on the Canadian pulp and paper industry. The two major Canadian products, newsprint and pulp, are already tariff-free into the U.S. However, protectionist sentiment in the U.S. is likely to continue putting pressure on Canadian officials to withhold any financial aid that might be considered a subsidy.

The American Paper Institute indicated recently that it would keep close watch on such mills as Domtar's in Windsor, Que. This is a fine paper mill that is being upgraded using a ten-year, $150-million interest-free loan from the federal and provincial governments.

PROTECTIONIST PRESSURES. The U.S. Congress has also been considering a trade bill that would broaden the definition of what constitutes a government subsidy to an industry, thus making a wide range of Canadian exports, including pulp and paper, vulnerable to countervailing duties. The Canadian Pulp & Paper Assn. last year began campaigning against the proposed bill, con-

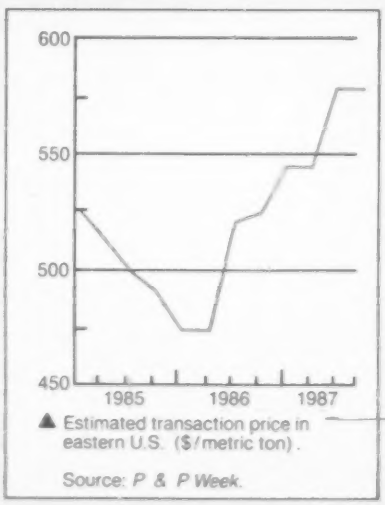
The dramatic rise in market pulp prices . . .



▲ Price for northern bleached kraft pulp delivered in U.S. ($/metric ton).

Source: *P & P Week*.

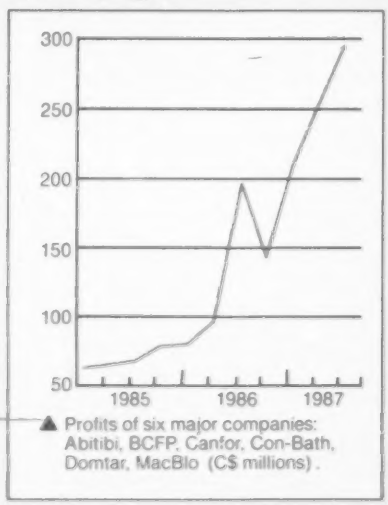
. . . plus firming newsprint prices . . .



▲ Estimated transaction price in eastern U.S. ($/metric ton).

Source: *P & P Week*.

. . . have lifted profits of Canadian mills.



▲ Profits of six major companies: Abitibi, BCFP, Canfor, Con-Bath, Domtar, MacBlo (C$ millions).

tacting U.S. publishers. "We are telling them this is a time bomb in Washington, and if it goes off, you're going to get bombed out as well as everybody else," said Anthony Rickards, CPPA's director of trade services. Canada supplies about 57% of the newsprint requirements in the U.S.

Canada's GNP growth in 1987 was expected to be a healthy 3.6% compared with 1986, although housing may tumble somewhat in 1988 if interest rates go up as expected. Lumber industry profits will also be impeded by changes in provincial forest policies, such as those involving stumpage and tenures, which changed in British Columbia last year in response to growing protectionist sentiment in the U.S.

Sectors of the industry other than building products should continue to perform well, however. Both newsprint and pulp prices are slated to increase in January. Supplies of these commodities are expected to remain limited through the end of the decade. In fact, shortages may occur in the interim unless the U.S. market slows down. Any shortages between the U.S. and Canada will be further constricted by demand from overseas, which has become a more lucrative market for the Canadian industry ever since the Canadian dollar's drop against overseas currencies. One forecast calls for the Canadian dollar to trade at 76 cents or better against the U.S. dollar through 1988.

Canadian producers, however, will continue to suffer loss of market share to U.S. imports if the Canadian dollar continues to strengthen in relation to the U.S. currency. Abitibi chairman Bernd Koken considered the major risk to the company in 1988 as any further decrease in the value of the U.S. dollar in relation to the Canadian dollar.

This trend has benefited U.S. producers of lumber, newsprint, and uncoated groundwood papers. The most significant opportunity, however, remains in the sale of U.S. lumber, where higher costs (labor, currency, and the 15% tariff) are forcing the Canadian producers to hold a pricing umbrella over the industry, according to First Boston analysts.

LABOR NEGOTIATIONS POSE THREAT. Labor negotiations involving most mills in British Columbia will also have an effect on industry markets and earnings this year. The two major paperworkers unions, the Canadian Paperworkers Union and the Pulp, Paper & Woodworkers of Canada, are expected to seek higher wage settlements than in past years. High profits over the past two years could put industry negotiators at a disadvantage in trying to negotiate more moderate wage increases.

Also, one major issue unresolved in the last round of bargaining is likely to cause problems. The International Woodworkers of America could again strike over the issue of contracting out, which threatens union jobs by allowing companies to hire contractors to do work now done by unionized employees.

NEWSPRINT

MORE MODEST ADVANCES IN PRICES, DEMAND

■ Market observers began in the final quarter of 1987 to modify their outlook for newsprint markets in 1988, following October's stock market crash. This seemed to mark a turnaround in the trend toward stronger newsprint markets experienced in the latter part of 1986 and 1987.

Instead of the 2% to 4% growth forecasts for 1988 made by industry analysts earlier in 1987, estimates later in the year were pared down to the lower end of the range, and even below if the U.S. economy should slide into a recession.

Most industry observers are keeping an open mind about the market falling off as early as the second half of 1988, despite such factors as the presidential election and the Olympics, which are expected to boost advertising lineage this year. In addition, markets should remain reasonably tight due to limited capacity increases in recent years. Supply is not expected to exceed consumption until 1990 at the earliest.

Prior to the fourth quarter's stock market downturn, market observers expected newsprint prices to rise as high as $750/metric ton by the first half of 1989. Now, however, the most optimistic forecast by Brian Topp of Capital Group Securities Ltd., Toronto, calls for a high of $680 by sometime in the second half of 1988. Even then, prices are likely to begin sliding in 1989 as new capacity comes online and the chance of a recession intensifies.

LONG-TERM DEALS. Already in the fourth quarter of 1987, North American newsprint producers began to court their most favorable customers with promises of large discounts for signing long-term agreements of three to five years, knowing that 1990-91 was shaping up to be a time of weakness for suppliers. If greenfield newsprint projects announced during 1987 plus incremental capacity increases are taken into account, industry output by 1990 could substantially exceed demand, especially if a recession slows growth.

According to Gary Palmero, of Oppenheimer & Co. Inc., New York, if there is no recession in 1988, the chances of a recession in 1989 are even greater. However, this could be beneficial since it might discourage other major capital investments while allowing for economic recovery in time for expansions to be absorbed. The worst case, noted Palmero, would be to have a recession in late 1989, when much of the anticipated capacity hikes are expected to come onstream.

John Carroll, of Andras Research Capital, Montreal, expects worldwide capacity to rise by 500,000 tons in 1987, by 280,000 tons in 1988, by 425,000 tons in 1989, and by 780,000 tons in 1990. In North America alone, capacity hikes of up to 1.9 million tons are forecast through 1991. However, only about 1.5 million tons of

this is committed, with another 500,000 tons still tentative. Considering the instability of financial markets late in 1987, few expected these projects would be able to secure funding, however.

Newsprint capacity in Canada is expected to rise by an annual rate of less than 1% between 1986 and 1989 to 10.16 million tons, according to the Canadian Pulp & Paper Assn. In the U.S., expansions will be somewhat greater during this time. According to figures from the American Paper Institute, capacity will rise by 1.7% a year between 1986 and 1989, but it will jump by 8.8% between 1989 and 1990 when capacity reaches an estimated 6.02 million tons.

According to the European Paper Institute, European newsprint capacity will rise from 6.63 million tons in 1986 to 7.85 million tons in 1991, for a net gain of 1.23 million tons. With the total growth in demand over the five-year period projected at just 349,000 tons annually, the increase in newsprint capacity there is expected to be more than three times the rise in demand. The gap between supply and demand is expected to increase from 562,000 tpy in 1986 to 1.436 million tons in 1991.

PRICE HIKE LESS CERTAIN. The prospect of a recession in 1988 could put a damper on price advancement as early as the first quarter, when most North American newsprint companies plan to raise levels by $30 to $40/ton to $630 (minus a 5% discount) in the West and $650 (minus a weighted average discount of about 7.5%) in the East. Earlier, many industry observers felt certain this latest price hike would stick, despite two price increases amounting to $75 already implemented in 1987. The prospects for further price advancement in 1988, however, appeared less likely than previously forecast.

Many industry observers, though, expected newsprint prices and consumption would continue to rise in 1988 but at a slower and more modest rate. With Champion International Co. and Kimberly-Clark Corp. delaying price increases until Feb. 1 and Mar. 1, respectively, it appeared highly probable that many customers would not be paying the new price until later in the first quarter. In addition, newsprint suppliers were price-protecting some tons through January for customers agreeing to delay shipments until that time.

Demand remained good late in the final quarter of 1987. Mills continued to run at near-capacity levels, and customers were still being asked to delay shipments in order to meet requirements for newspapers with lower stocks. Still, some publishers were trying to build inventories in order to undermine the movement to raise prices in January.

With the U.S. dollar continuing to slide in 1987, North American imports remained at a minimum. Levels for 1987 were not expected to exceed the 300,000-ton point that they have been at for some time, and they should remain flat through 1988. However, if newsprint demand escalates higher than projected this year, limited North American supplies could force publishers into the overseas market.

Rising prices combined with limited supplies during 1988 and most of 1989 are expected to put a lid on the growth in newsprint demand through the end of the decade. Already in late 1987, publishers were considering ways to reduce newsprint consumption, such as narrowing web width and discontinuing special editions and promotions. This could also put pressure on suppliers to ease prices. More and more industry observers have started to see a turning point in the market as early as the latter half of 1988, and prices are likely to turn around by 1990.

UNCOATED GROUNDWOOD

REASONABLY GOOD DEMAND EXPECTED

■ North American producers of uncoated groundwood papers can expect to tally relatively healthy operating rates, as long as newsprint and lightweight coated (LWC) markets remain tight. The strong market is reflected in the announced across-the-board price increases scheduled for Jan. 1, 1988.

The roots of the current prosperity lie in demand that was strong and the unexpectedly strong LWC markets that overcame predictions of overcapacity as new machines failed to start up as quickly as expected.

Producers are likely to average about 94% operating rates, according to John D. Maine, vice president for printing and writing papers at Resource Information Systems Inc. Richard Kelertas, a paper and forest products analyst with McLeod Young Weir Ltd. in Toronto, Ont., put 1988 operating rates for Canadian producers at about 96% to 97%, supported by newsprint utilization rates of 98% to 99%.

Maine explained to the Third International Uncoated Groundwood Papers Conference last November that North American consumption this year probably will rise about 6.1% to about 3.3 million metric tons. Demand growth will be particularly strong this year due to tight LWC and newsprint markets, Maine said. Kelertas sees growth in Canada of about 3.5% to 4%.

GROUNDWOOD CAPACITY RISES. RISI's Maine also predicted that North American capacity will jump about 7.3% in 1988 from 1987. The American Paper Institute put the U.S. capacity increase at 6.2%. Canada's groundwood capacity should be about 10.9% higher in 1988, the Canadian Pulp & Paper Assn. reported.

In the U.S., Lake Superior Paper Industries is scheduled in 1988 to produce about 136,000 metric tons of premium supercalendered (SC) paper. The mill at Duluth, Minn., came online in November 1987. Additional tonnage will be produced at Abitibi-Price Inc.'s Kenogami Mill in Jonquière, Que., which began producing

premium-grade SC last year. St. Marys Paper also is bringing additional SC capacity online in November.

SC papers are, in fact, the high-growth area for uncoated groundwoods. Maine said he expects SC demand in North America to rise 12% this year, with consumption reaching almost 1.2 million metric tons.

Kelertas said that Canada, which is the world's second largest consumer of paper per capita, also is the largest consumer of SC paper, even ahead of the U.S. and European countries. The Winter Olympics in Calgary and a domestic election, either before or after the presidential contest in the U.S., will help boost demand for SC, he said.

Unlike in the U.S., Canadian publishers and advertisers already accept SC, and there is not the grade shifting that occurs farther south, Kelertas said. "We've got a much more mature printing industry in terms of their use of these newer grades of paper, the higher-value paper," he said.

MF OUTLOOK NOT AS GOOD. Demand for machine-finished (MF) grades will decline this year because of grade switching to SC and newsprint.

North American-made SC paper will help erode the total groundwood market share held by the Europeans, who will ship almost 15% less to North America in 1988. The total uncoated groundwood imports from Europe should be about 380,000 metric tons. The European tonnage is being replaced in part by better quality paper from the SC projects at Abitibi, Lake Superior, and St. Marys.

Paper consumption by directory publishers is likely to increase 5% to about 650,000 tons this year.

Inserts and flyers will use almost 2.3 million tons, 15% more than in 1987. A strong market for uncoated groundwood paper is business forms, growing by 15% to 35% annually in recent years and expected to almost double between the mid-1980s and mid-1990s. Groundwood papers account for about 8% of all paper shipped to forms converters. Groundwood forms are used for computer printouts, generally for companies' internal sales documentation and reports.

List price differential between groundwood and free-sheet forms paper has been close to $200/ton. The Jan. 1 increase brought up groundwood forms by $50 to $60/ton, which would put 15-lb at about $650/ton. The groundwood forms hike followed a similar increase in uncoated free-sheet forms bond.

Other increases this month: MF offset, $40 to $45/ton to somewhere in the $615 to $650/ton range, depending on mill; and rotonews, up to about $610 to $645 for standard and $655 to $675/ton for premium, from the current $575 to $595 and $600 to $635, respectively.

In addition, directory papers increased $30/ton or so, pushing 22.5-lb white to about $750/ton and 22.5-lb yellow to $770. Some mills will be substantially higher than others, reaching up to somewhere near $775/ton for 20-lb, though many will be lower. At least one producer, Consolidated-Bathurst Inc., has dropped f.o.b. mill pricing and switched to delivered pricing.

K-MART DROPS U.S. PURCHASES. Some end users, most notably K-Mart, are going to Canada for both paper and printing. K-Mart, which is the second largest U.S. retailer, also buys a small but significant portion of its paper from Finnpap, the consortium of Finnish paper mills. In 1987, the discount store chain agreed to double its purchases of SC-A paper from Finnpap to 72,000 short tpy from 1988 to 1990. The chain uses more than 200,000 tons of paper annually, and most of that amount is SC-A for rotogravure.

But K-Mart also delivered some bad news for the paper industry late last year when officials announced the company would reduce its 1988 newspaper insert advertising budget by some $40 to $45 million. This means a probable 13% drop in paper purchases, or a cut of about 24,000 tons. Most of that would have been MF and SC-B grade. The money will be used instead for television advertising, other promotions, and in-store events, according to published reports. The move is part of K-Mart's attempt to appeal to a broader, more affluent consumer audience.

MARKET PULP

WILL THE GOOD TIMES CONTINUE?

■ North American market pulp producers have been enjoying boom times, thanks to the declining dollar and a favorable supply-and-demand balance.

Since the end of 1985, the price of benchmark northern bleached softwood kraft pulp in Europe has risen from $390/metric ton to $635 in the fourth quarter of 1987—a 63% increase in dollar terms. And in late November, some Canadian producers announced another $45/ton increase to $680 for the first quarter of 1988.

But even this latest increase would still not bring the dollar price up to anywhere near the fourth-quarter list price of Scandinavian mills in local European currencies. Because of the sharp decline of the dollar since mid-October, the fourth-quarter Scandinavian list price of DM1,180/metric ton in Fed. Rep. Germany, for example, was equivalent to approximately $700 to $710 by early December.

Such price levels have made market pulp extremely profitable for North American mills to produce, and they have been straining to turn out every last ton—and then some. Canadian and U.S. chemical paper-grade market pulp mills were expected to run at close to 100% of capacity for all of 1987.

Nevertheless, the recent rumblings of recession have made some market pulp industry observers wonder: Is the party almost over?

EXCHANGE RATE IMPACT. One who believes the strong market will continue through at least 1988 is William H. Vaughan, marketing vice president of Skeena Cellulose Inc., who doubts there will be a recession this year. "We believe that production and shipments will stay in the 95%- to 99%-of-capacity range, which will result in a very firm market."

He also points out that the decline of the dollar has made it easy for the majority of market pulp producers to accept the new, higher price levels. "About 53% of demand for world market pulp is in the strong-currency countries, mainly Europe and Japan. Because of the decline in the dollar, these customers are not paying extraordinarily high prices in their own currencies." In fact, price levels are still not back to peaks reached in the early 1980s in local currency terms, he noted.

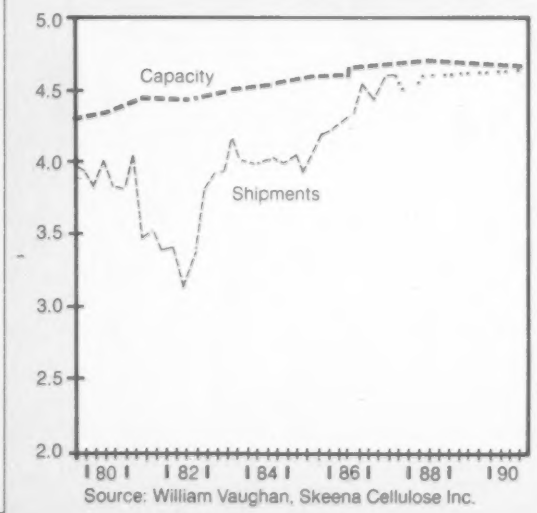
"Another 32% of world market pulp demand is in North America, where customers will be paying record prices and there could be some small effect on demand," Vaughan said. "The remaining 15% goes to countries whose currencies have not strengthened against the U.S. dollar, and these customers will be hardest hit by record pulp prices. Even if demand declines in these countries, it would not have much effect on total world demand," he added.

LIMITED CAPACITY GROWTH. While exchange rates are a major factor in the sharp runup in dollar pulp prices, a favorable underlying supply/demand balance has also helped.

World capacity of white chemical pulp is approximately 65 million metric tons, said Michael A. Poler, director of BCTMP sales for ITT Rayonier Inc. About 40% of the market is supplied by market pulp mills, while the rest is captive. "The industry, however, is doing little building of new capacity to meet expected demands," said Poler. "At an expected growth rate of 2% to 2.5% annual growth based upon the 65-million-ton figure, that should translate into 1.3 to 1.6 million tons of new chemical pulp capacity or four to five new pulp mills each with 350,000-tpy capacity, but no new chemical pulp mills are being built.

"Part of the shortfall will be made up by bleached chemi-thermomechanical pulp," Poler said. In 1986, there was a capacity of 785,000 tons of BCTMP market pulp—280,000 tons or 36% in North America, according to Rayonier's figures. By 1989, world capacity of market BCTMP should climb to 2.4 million tons, with 1.5 million tons in North America. "So a shortfall is going to exist even with the addition of considerable BCTMP capacity," noted Poler, who will be marketing output from the Cascades (Port Cartier) Inc. mill.

FIGURE 1: **North American and Nordic chemical paper-grade pulp shipments and capacity (millions of metric tons/quarter).**



Source: William Vaughan, Skeena Cellulose Inc.

TIME FOR CAUTION? Nevertheless, pulp producers should not be overconfident, since changes may be taking place in the underlying market supply/demand balance which are not yet fully apparent, said Ross Hay-Roe in the latest issue of *PaperTree Letter*. "We may be getting close to that tricky part of the cycle."

He noted that North American and Scandinavian producer inventories of chemical paper-grade market pulp may have bottomed out at the end of June at 795,000 tons. Meanwhile, consumer inventories have probably been building for two years. In the U.S. (for which statistics are available), levels are up nearly 50% since the end of 1985.

"The evident buildup in customer inventories and the incipient rise in total mill inventories would be of no concern if final demand were likely to rise," according to Hay-Roe. "But end-use markets are in ample supply, and no one's short of pulp, while a sense of economic uncertainty grows.

"We've had two years of strong and rising pulp markets. While there is already talk of the next price increase [beyond first-quarter 1988], it shouldn't surprise anyone if further price changes are limited to currency adjustments."

TABLE 5: **Price of northern bleached softwood kraft pulp in U.S. dollars and local currency equivalents.**

		(per metric ton)	
4th quarter	**U.S. dollars**	**Deutsche marks**	**Japanese yen**
1981	$545	DM1,227	Y117,580
1985	390	1,005	76,600[1]
1986	520	1,044	83,467
1987	635	1,055[3]	84,135[3]
% change 1985-87	+62.8%	+5.0%	+9.8%

1. Based on $370 price in Japan. 2. Nordic list price.
3. Based on $1=DM1.66, $1=Y132 rates in early December.

LABOR

LIGHT BARGAINING YEAR, HEAVY ISSUES

This year will be a light bargaining year for the U.S. paper industry. About 85 to 90 contracts are up for negotiation, with about a third of these coming due in the South. Most of the contract negotiations occurring in the West will take place at Canadian mills.

In 1987, the paper industry and the unions continued to clash over the issues of premium pay for Sunday and holiday work and flexible work rules. Indeed, 1987 drew to a close without any resolution to the strikes the United Paperworkers International Union has been conducting against three International Paper Co. mills since mid-1987.

The industry is not expected to back down on these issues in 1988 negotiations. Companies feel that in the face of increasing international competition from such countries as Brazil, Rep. Korea, and Taiwan, plus competition from plastic products, they cannot afford to operate without winning these concessions from unions.

"Companies' commitment to running their mills during a strike is very strong," observed Richard P. Klinzing, vice president of employee relations for the American Paper Institute. It is a matter of debate among companies right now whether this will take the form of permanent or temporary replacements. Some companies have already shown they are willing to incur the short-term costs of having to replace their entire work force rather than give in on these issues. For example, International Paper Co. and Stone Container Corp. permanently replaced striking union workers last year.

In line with the strategy of curtailing long-term costs, companies will continue to negotiate contracts that contain lump-sum payments, instead of committing to wage increases over the period of a three- or four-year contract. Klinzing observed that about two-thirds of the contracts concluded in both 1986 and 1987 contained lump-sum payments in the first year.

He said that paper companies are interested in making the labor component of their costs more stable. Consequently, more mills are negotiating three-year contracts instead of two-year contracts. API figures show that through October 1987, 50 of the 65 settlements concluded were three-year contracts, and only nine were for two years.

CURTAILED WAGE INCREASES. Wage increases were modest last year and will continue to be so in 1988. During the first ten months of 1987, the average first-year wage increase for shift workers in the pulp and paper industry was 0.4%, according to the API. This is the same figure as in 1986, and it does not include lump-sum payments. Second-year wage increases averaged 1.5%, and third-year increases amounted to 1.6%, the API reports. This compares with 2.2% and 2.5%, respectively, in 1986 contracts.

1987 was a big year for Pacific Coast bargaining, and wage increases were nonexistent in some contracts, which helped bring wages more in line with those of union members in the rest of the country. A case in point is the three-year contract Weyerhaeuser Co. concluded last year with members of the Assn. of Western Pulp & Paper Workers union at five of its mills in the Pacific Northwest. The contract froze wages but included a $650 payment in the first year and a provision for pay increases of up to 4% each year, depending on each mill's profitability.

Klinzing said contracts that contain provisions for variable pay based on mill performance, which came on the scene about five years ago, will continue to play a small part in 1988 negotiations. Since these kinds of contracts require a lot of study and experimentation, their implementation will be slow. "You're not going to all of a sudden see 50 of these kinds of agreements next year," Klinzing observed.

UNION SEEKS TO CHANGE LAW. Klinzing pointed out that this year's bargaining could be affected by the fact that the UPIU will hold elections for their top officers, including UPIU president Wayne Glenn. Should a new slate be elected, labor's bargaining agenda could change. Another unknown is whether UPIU locals will bargain collectively, as they are doing in negotiations with IP and Georgia-Pacific Corp.

Throughout 1987, the UPIU maintained that its members should not be asked to concede on issues of premium pay or work rules during a period when paper companies were earning record profits. This argument lost a lot of its force after the stock market collapse. Paper company stocks lost between 20% and 30% of their value last October. This is another reason why wage increases in 1988 will be modest.

The UPIU and other unions are lobbying Congress to limit companies' right to permanently replace striking workers. During testimony before the President's Advisory Committee on Mediation & Conciliation last year, Glenn said he felt that labor-management relationships in the paper industry were at the lowest point he had witnessed during his lifetime in the labor movement. He testified that most of the European democracies and Canada already have federal legislation that protects strikers' jobs. He said he believed collective bargaining

TABLE . **Major contracts by region on 1988 bargaining calendar of U.S. paper industry.**

Company	Mill location	Union	No. of employees	Contract expires
Southern region				
Mead	Kingsport, Tenn.	O	800	1/25
International Paper	Camden, Ark.	U,B,A,O	536	1/31
	Natchez, Miss.	U,B,A,O	856	2/29
Stone Container	Panama City, Fla.	U,B,A	527	2/29
Buckeye Cellulose	Memphis, Tenn.	O	248	3/7
Georgia-Pacific	Port Hudson, La.	U	223	6/6
Chesapeake	West Point, Va.	U	603	6/15
Champion International	Pensacola, Fla.	U,B	549	6/30
Georgia-Pacific	Crosett, Ark.	U,A	1,100	6/30
ITT Rayonier	Fernandina Bch, Fla.	U,B	376	6/30
Rock-Tenn	Chattanooga, Tenn.	U	140	6/30
Union Camp	Franklin, Va.	U,O	1,187	6/30
Westvaco	N. Charleston, S.C.	U,B,A	879	6/30
Gaylord Container	Bogalusa, La.	U,B	552	7/31
St. Joe Paper	Port St. Joe, Fla.	U,B,A	590	7/31
Stone Container	Hopewell, Va.	U	359	7/31
Temple-Eastex	Evadale, Texas	U,B	832	7/31
Mead	Lynchburg, Va.	U	415	9/16
International Paper	Vicksburg, Miss.	U,B	258	9/26
Ecusta	Pisgah Forest, N.C.	U	1,301	10/3
MacMillan Bloedel	Pine Hill, Ala.	U	410	10/4
Arkansas Kraft	Morrilton, Ark.	U	275	10/14
Jefferson Smurfit/CCA	Brewton, Ala.	U,B,A,O	495	10/15
Tennessee River	Counce, Tenn.	U,B	397	10/27
Owens-Illinois	Big Island, Va.	U	253	10/31
Jefferson Smurfit	Cedartown, Ga.	O	39	11/6
Weyerhaeuser	Valliant, Va.	U	317	11/19
International Paper	Texarkana, Texas	U,B	664	11/30
New England region				
James River	Fitchburg, Mass.	U	92	3/31
Yorktowne Paper	Gardiner, Maine	U	52	4/30
James River	Jay, Maine	U,O	187	5/31
Scott Paper	Winslow, Maine	U,B,A,O	518	5/31
Hollingsworth & Vose	East Walpole, Mass.	U,O	93	7/1
	West Groton, Mass.	U,O	115	7/1
Erving Paper Mills	Erving, Mass. Brattleboro, Vt.	U	475	7/31
Rising Paper	Housatonic, Vt.	U	144	7/31
James River	Groveton, N.H.	U	550	8/31
Monadnock Paper Mills	Bennington, N.H.	U,O	116	9/1
S.D. Warren	Skowhegan, Maine	U,B,A	475	9/30
Eastern region				
Westvaco	Tyrone, Pa.	U,B	211	2/17
Scott Paper	Fort Edward, N.Y.	U,B,O	403	4/30
Columbia	Chatham, N.Y.	U	129	5/1
International Paper	Ticonderoga, N.Y.	U	700	6/1
Georgia-Pacific	Delair, N.J.	U,O	86	6/2
Finch, Pruyn & Co.	Glens Falls, N.Y.	U,A,O	644	6/15
Tagsons Paper	Mechanicville, N.Y.	U	198	7/1
Boise Cascade (Latex)	Beaver Falls, N.Y.	U	95	9/14
Marcal Paper Mills	Elmwood Park, N.J.	U	800	9/15
Newark Boxboard	Newark, N.J.	U	53	9/15
Pope & Talbot	Ransom, Pa.	U	400	9/16
Midwest region				
Simpson Paper	Vicksburg, Mich.	O	254	1/26
Georgia-Pacific	Gary, Ind.	U	105	3/31
Mead Paper	Cincinnati, Ohio	U	143	4/20
James River	Ashland, Wis.	U	183	4/30
Port Huron Paper	Detroit, Mich.	U	200	4/30
Shawano Paper	Shawano, Wis.	U	190	5/6
Fox River Paper	Appleton, Wis.	U,O	192	5/31
Green Bay Packaging	Green Bay, Wis.	U	111	5/31
Nekoosa Papers	Nekoosa, Wis.	U,A,O	732	5/31
	Port Edwards, Wis.	U,A,O	902	5/31
Manistique Papers	Manistique, Mich.	U	146	6/15
Owens-Illinois	Tomahawk, Wis.	U,A	354	6/15
S.D. Warren	Muskegon, Wis.	U	744	6/15
Alton Packaging	Alton, Ill.	U,O	243	6/30
Appleton Papers	Combined Locks, Wis.	U	530	6/30
Fletcher Paper	Alpena, Mich.	U	157	6/30
Packaging Corp. of America	Griffith, Ind.	O	68	6/30
Flambeau Paper	Park Falls, Wis.	U	473	7/31
Mead Paper	Chillicothe, Ohio (Chillicothe mill)	U	1,360	8/1
	Chillicothe, Ohio (Chilpaco mill)	U,O	748	8/1
Middletown Paperboard	Middletown, Ohio	U	54	8/16
Weston Paper	Terre Haute, Ind.	U	134	10/21
Pacific region				
Willamette Industries	Port Hueneme, Calif.	U	64	1/15
James River	Halsey, Ore.	U,B	510	1/31 2/28
Smurfit Newsprint	Oregon City, Ore.	W	208	3/15
	Newberg, Ore.	W	274	4/1
California Paperboard	Santa Clara, Calif.	W	85	4/30
Louisiana Pacific	Samoa, Calif.	W	232	6/1
Willamette Industries	Albany, Ore.	W	317	6/1
Inland Container	Newark, Calif.	U	43	6/30
Federal Paper Board	Los Angeles, Calif.	U	86	8/1

Legend: U = United Paperworkers International Union, W = Assn. of Western Pulp & Paper Workers; A = International Assn. of Machinists & Aerospace Workers; B = International Brotherhood of Electrical Workers; O = Others.

1. Reopener possible. 2. Reopener. 3. Settled Nov. 9, 1986.

Source: American Paper Institute Employee Relations Dept.

will fail in the U.S. unless the appropriate legislation is adopted.

Julian M. Kien, a consultant to the paper industry on labor issues, observed that unions seem to be losing their clout because the workplace is becoming more democratic. He points to worker participation and representation on boards of directors and employee stock ownership programs as examples of this trend. Employees are gaining increased access to decision-making, and they have the opportunity to become partners with management instead of adversaries.

CANADIAN BARGAINING SHIFTS TO WEST. British Columbia will again be the focus for labor negotiations in the Canadian pulp and paper industry in 1988. Both labor and management indicated early on that they would take a firm stand in negotiations. Contracts are due to expire on June 30, 1988, at 19 mills in British Columbia. Eight of the mills have Canadian Paperworkers Union locals, and the rest are represented by the Pulp & Paper Workers of Canada. The two unions met twice late last year to discuss upcoming negotiations, but real bargaining is expected to occur in March.

The Pulp & Paper Industrial Relations Bureau (PPIRB), which represents management, has warned union members that they should not expect bountiful contracts this year despite the fact that the industry enjoyed healthy profits last year. Don Saunders, chairman and CEO of the PPIRB, commented, "The British Columbia forest industry has emerged from the recession of the last five years with tighter management and more productive and efficient operations, but there will be future low points in the economic cycle that the industry must prepare for now." He said the industry's main concern is to "be around and financially sound after the next low point in the economic cycle."

Contracts at most sawmills in British Columbia are also up for renegotiation this year. The International Woodworkers of America-Canada started building its strike fund last October. The C$5/month strike fund levy on almost 40,000 woodworkers in western Canada is expected to generate $200,000/month. In March, a royal commission is expected to report on the issues of contracting out work and flexible workshifts. These were the main sticking points that snarled negotiations in 1986 and led to a five-month strike at the sawmills.

PULPWOOD

CHIP SURPLUSES WILL DWINDLE

Throughout 1987, pulp mills bargained from a position of strength when it came to buying pulpwood. Supplies were either sufficient or overabundant, depending on the region. Chip surpluses at some sawmills became so large that storage was a problem. This year, pulpwood supplies will be tighter.

The American Paper Institute estimated that total pulpwood consumption in 1987 was 90.704 million cords—a 4.4% increase over 1986 levels. Consumption in 1988 is expected to grow 2.2% from 1987, amounting to 92.725 million cords, according to estimates made by the API.

TO BUY OR NOT TO BUY? In the wake of the stock market collapse, people may back off from making major purchases such as houses this year. This means sawmills will mill less lumber, causing the oversupply of woodchips to disappear. After the stock market crashed, the National Assn. of Home Builders revised its 1988 forecast for U.S. housing starts downward, from 1.55 million to 1.45 million starts. This compares with 1.8 million starts in 1986. Through October of 1987, housing starts dipped to a seasonally adjusted annual rate of 1.513 million units, the Commerce Dept. reported. This was the lowest level they had reached since April 1983.

On the other hand, interest rates have fallen, giving consumers more incentive to buy houses. Plus, they may consider investment in a house to be a safer bet than putting their money in the stock market. If this attitude wins out, chip supplies would stay healthy.

Chip supplies in the Pacific Northwest could tighten this year if housing starts slide while pulp mills in the region continue to run at high levels of capacity. Export demand for woodchips from the region is also likely to remain strong because of the declining U.S. dollar, which makes buying fiber from the U.S. more attractive for Japanese pulp and paper mills.

Chip supplies in the Northwest also could be curtailed by British Columbia's decision last October to increase stumpage fees on timber that is owned provincially. Because of this, British Columbia has asked the federal government to eliminate the 15% federal export

TABLE 4: **Pulp and paper prices rose, but raw material costs remained almost unchanged throughout most of 1987.**

	1Q	2Q	3Q
West Coast U.S. Douglas fir chips (f.o.b. export prices to Japan)	$78.40	$78.40	$76.40
Roundwood, pine[1]	41.55	42.43	41.46
Roundwood, hardwood[1]	33.40	34.10	33.73
Greenchips, pine, clean[1]	23.60	23.73	18.76
Greenchips, hardwood, clean[1]	18.52	18.76	14.05

1. Source: *Timber Mart-South*. Roundwood prices include delivery to dealer yard. Greenchip prices are f.o.b. sawmill as of third-quarter 1987.

tax on softwood lumber going to the U.S. British Columbia's increased fees will raise lumber mills' costs on both overseas and domestic shipments, unlike the federal tax. Observers thus forecast a drop in lumber exports, which would shrink chip supplies.

DROUGHT DRAINS CHIP SUPPLIES. During the second half of last year, Oregon and northern California experienced the worst forest fires they have had in 30 years. The U.S. Forest Service estimated that about 3.35 billion bd ft of timber was damaged. The USFS said that about 1.7 billion bd ft of wood can be saved from the forests that suffered the most damage. While this means that a lot of wood will be harvested quickly, to prevent insect infestations, fewer clean residual chips will be available, and most mills will not risk pulping charred wood.

The southern U.S. also experienced a drought during second-half 1987, but it did not curtail logging as much as in the Northwest. Pine pulpwood supplies in the South were adequate throughout 1987. Prices for roundwood remained relatively unchanged throughout last year, and they should be in equilibrium during the early part of this year. Mills in the South will continue to compete for hardwood since it is becoming a necessary ingredient of most mills' furnish.

REGULATORY DEVELOPMENTS

COSTLY LAWS IN THE MAKING

Several federal regulations are expected to be enacted in 1988 that will have a direct effect on the paper industry. The most important of these regulations are described below.

DIOXIN LIMITS. Last fall, the Environmental Protection Agency and the American Paper Institute released the preliminary findings of a study of five bleached kraft pulp mills. This study revealed that dioxin was present in the effluent of at least three of the mills (*P&P*, Oct., p. 33).

Later in the year, it was also revealed that a separate American Paper Institute study had discovered trace amounts of dioxin in a wide range of paper products made from bleached kraft pulp, including tissue paper, some grades of printing/writing paper, packaging paper, and paperboard.

As a result of these two findings, the EPA has begun to develop a permitting strategy for dioxin discharges from all the bleached kraft pulp mills in the U.S.—about 85 mills. A draft of the strategy reportedly encourages states to collect data from their respective bleached kraft mills, reopen the permits of these mills, and institute some controls.

The API also met with the Food & Drug Administration and the Consumer Product Safety Commission late last year to describe the product testing that had already been accomplished and coordinate further testing. Limits on dioxin in consumer products are probably farther off since the amount of dioxin found in these is minute and difficult to discern.

Separate from these two studies, the EPA released the findings of the National Dioxin Study, begun in 1983. This particular study found more dioxin than was expected in fish downstream from some paper mills. The EPA will continue to monitor the levels of dioxin in fish this year.

It seems a safe bet that some kind of limits will be imposed on dioxin in mill effluent this year. This will be a hardship for mills because currently only a handful of laboratories around the country have equipment delicate enough to detect these minute levels of dioxin, leading one to conclude that the monitoring process will be costly.

Aside from the dioxin issue, the U.S. paper industry can look forward to more stringent New Source Performance Standards for the discharge of certain chemicals, since an $18-billion amendment to the Clean Water Act was passed early last year.

CLEAN AIR ACT AMENDMENT. Late last year, the House and Senate began work on a revision of the Clean Air Act that would tighten controls on the causes of acid rain and other forms of air pollution. As reported out of the Senate Environment Committee, the bill would tightly control coal-fired boiler emissions and impose controls on automobile pollution and solid waste incinerators. The bill would also allocate $2.5 billion over the next five years to develop coal burners that would emit less pollution.

The issue of acid rain is causing a widening rift between the U.S. and Canada. It is estimated that the U.S. discharges about 24 million tons of sulfur dioxide a year. Canada estimates that about half its acid rainfall is caused by air pollution generated in the U.S. The Canadian Pulp & Paper Assn. is calling for further study to find out if acid rain is the cause of dieback in Canada's forests. The Canadian government is expected to release a report shortly that indicates growth rates for white spruce have declined significantly in the past 20 years. ■

U.S. PAPER INDUSTRY CAPACITY GROWTH PICKING UP—2.5%/YEAR OVER 1988-90

In 1987, capacity jumped 2.2 million tons—the largest gain in 14 years, latest American Paper Institute capacity survey finds

By NOEL DEKING, News Editor

The U.S. paper industry will increase manufacturing capacity by 6.1 million short tons during 1988-90 for a 2.5% average annual advance, according to the American Paper Institute's latest annual capacity survey. This three-year total represents the most new capacity since 7.6 million tons were added during 1966-68 and follows 1987's 3% gain of 2.2 million tons, which is the highest single-year gain in 14 years.

The survey reflects the industry's current prosperity, as paper and board production is approaching 74 million tons for the year, a 4.4% gain over 1986, and sales are nearing $86 billion, 15% above the 1986 high. "This strong demand for paper and paperboard, largely in newsprint, printing and writing papers, and unbleached kraft linerboard, has encouraged producers to expand capacity at a higher rate than planned in 1986," said API's president, Red Cavaney. Indeed, the figures are well above the 1.8% annual expansion predicted in 1986.

Cavaney also noted that since the stock market's Oct. 19 plunge, investment plans have not changed and "there is no evidence, as yet, of any major buildup of inventories at either paper mills and plants or at customer levels." He said that the industry's 1987 operating rate should turn out to be about 95%.

Because of what may happen to the economy this year, paper companies have already hedged their short-term investment plans. For 1988, capacity will increase a modest 2.3%, as compared to 1987's 3% increment. Substantial capacity increases are scheduled for 1989-90, particularly in linerboard and newsprint, but these long-term investment plans may change, depending on the economy's performance.

PRINTING/WRITING GRADES STRONG. Paper capacity is expected to rise 2.8% annually during 1988-90, while paperboard capacity will increase 2.3% annually. The printing and writing grades, notably coated papers and uncoated free-sheet papers, will account for 2.2 million tons, or 66%, of the three-year paper capacity increase.

Uncoated free-sheet capacity will rise by more than 1 million tons, with two new paper machines scheduled to start up in 1988 and 1989, according to API. Nevertheless, the expansion rate over the next three years of 2.9%/year will be down from the 4.4% average rate of increase over the past ten years.

Coated groundwood papers, at 4.13 million tons in 1987, was 192,000 tons below last year's survey estimate. This was the result of capacity swings to other grades and delayed or reduced expansion plans. Capacity will increase at a nearly 3.0% rate over 1988-90, including one new 200,000-tpy machine which will replace some existing capacity. However, the coated free-sheet paper

TABLE 1: **Growth trends in U.S. capacity (000 short tons).**

Grades	Additions ten year increase	1978-87 average annual growth	Additions three year increase	1988-90 average annual growth
Total paper and paperboard	**16,017**	**2.3%**	**6,063**	**2.5%**
Total paper	**9,505**	**2.8**	**3,351**	**2.8**
Newsprint	1,872	3.9	695	3.8
Printing and writing	7,193	4.0	2,225	3.2
Packaging and industrial converting	(650)	(1.1)	110	0.7
Tissue	1,090	2.2	320	1.9
Total paperboard	**6,512**	**1.9**	**2,732**	**2.3**
Unbleached kraft	4,324	2.6	1,971	3.3
Solid bleached	655	1.5	191	1.3
Semichemical	980	1.9	293	1.7
Recycled	553	0.6	277	1.0
Construction grades	**(2,327)**	**(7.1)**	**—**	**—**
Total woodpulp[1]	**10,904**	**2.0**	**3,584**	**1.9**
Dissolving and special alpha	(266)	(1.7)	14	0.3
Sulfite	(638)	(3.3)	(44)	(0.9)
Sulfate and soda	9,865	2.4	2,812	2.0
Semichemical	113	0.2	119	0.9
Mechanical	1,829	3.5	692	3.5
Woodpulp for construction paper and board	**(1,038)**	**(7.4)**		

1. Excludes construction grades.
Source: American Paper Institute.

capacity estimates have been raised, and growth is now expected to average 6.2%/year over the 1988-90 period. Two new machines are planned, both replacing some existing capacity.

Newsprint capacity increased only 2.8% in the U.S. over the past four years, as producers upgraded existing twin-wire machines to improve quality. However, capacity is expected to jump by almost 12% over the next three years, mainly due to two new greenfield mills and a large new paper machine.

Tissue paper capacity is expected to rise at a 1.9% average annual rate over the next three years and includes the startup of two new paper machines. Unbleached kraft packaging papers capacity declined about 500,000 tons over the last four years, and further reductions of more than 200,000 tons are reported for 1987 mainly due to a machine conversion, according to API.

UNBLEACHED KRAFT PICKS UP. In the paperboard grades, unbleached kraft will show the largest gain, adding nearly 2 million tons for a 3.3% average annual growth rate during the next three years. A major portion of this increase, however, is in the folding boxboard category, which includes the addition of a new 420,000-tpy machine. Folding boxboard capacity is expected to jump nearly 49% over the next three years.

Linerboard capacity, however, is expected to grow at a more moderate 2.7%/year average annual rate over the 1988-90 period. This includes a new 350,000-tpy machine and 14 individual linerboard expansions of 50,000 annual tons or greater.

Semichemical medium capacity is expected to grow at a moderate 1.7%/year rate, and no new machines are planned. Bleached paperboard will add 191,000 tons, or 1.3%/year. Recycled paperboard will show a gain of 277,000 tons, or 1.0% annually, mostly in the containerboard and folding grades.

MARKET PULP EXPANSION LAGS. Woodpulp capacity will increase more slowly than paper and paperboard. Total woodpulp capacity will increase 3.6 million tons, or 1.9% annually, over the next three years, to reach 65.3 million tons by 1990. The market pulp share of this total will increase 280,000 tons, or 1.1% annually, to 8.4 million tons by 1990. Interestingly, the 1987 market pulp total of 8.1 million tons is more than 400,000 tons higher than producers' estimates in the 1986 survey.

Recyclable paper will increase its share of the industry's fiber consumption by nearly 1% to 21.5 million tons in 1990. This share increase for recyclable paper, mostly corrugated waste in the manufacture of unbleached kraft linerboard, combined with a greater use of pulp manufactured onsite and increased pulp imports from Canada, will balance the industry's furnish needs over the next three years.

FRUITS OF INVESTMENT. During the six-year period between 1985 and 1990, the industry will have added 12.7 million tons of additional capacity. New machines will provide 35% of all new capacity, with 11% coming from machines in new greenfield mills and 24% from machines installed in existing mills. Machine rebuilds and other productivity improvements will account for 54% of the new capacity growth. ■

TABLE 2: **Paper/board annual capacity, 1987-90 practical maximum basis (000 short tons).**

	1987	1988	1989	1990[1]
Total paper and paperboard[2]	**78,021**	**78,799**	**81,847**	**84,104**
Total paper	**39,336**	**40,278**	**41,437**	**42,687**
Newsprint	5,941	6,013	6,099	6,636
Printing writing and related	22,168	22,832	23,727	24,393
Uncoated groundwood	1,756	1,865	1,882	1,917
Coated groundwood	4,132	4,215	4,344	4,509
Coated free-sheet	3,237	3,393	3,767	3,880
Uncoated free-sheet	11,520	11,780	12,190	12,543
Cotton fiber	196	197	198	199
Thin papers	309	309	309	309
Solid bleached bristols	1,018	1,038	1,037	1,036
Packaging and industrial converting	5,592	5,662	5,687	5,702
Unbleached kraft	3,370	3,416	3,430	3,438
Bleached packaging and industrial converting	531	530	530	530
Special packaging	570	570	569	568
Special industrial	1,122	1,147	1,158	1,167
Tissue	5,635	5,771	5,924	5,955
Total paperboard	**38,685**	**38,521**	**40,410**	**41,417**
Unbleached kraft	19,117	19,596	20,193	21,088
Kraft linerboard	17,704	18,071	18,633	19,195
Solid bleached	4,675	4,768	4,854	4,866
Semichemical	5,641	5,711	5,863	5,934
Recycled	9,252	9,446	9,500	9,529
Total construction paper and board	**2,128**	**2,128**	**2,128**	**2,128**

1. Represents only currently known commitments.
2. Excludes construction grades.
Source: American Paper Institute.

TABLE 3: **U.S. market woodpulp capacity, 1987-90 practical maximum basis (000 short tons).**

	1987	1988	1989	1990[1]
Total market woodpulp	**8,165**	**8,400**	**8,454**	**8,444**
Dissolving	1,376	1,390	1,391	1,391
Chemical paper grades	6,776	6,996	7,049	7,040
Sulfite paper grades	285	285	285	285
Sulfate and soda paper grades	6,491	6,711	6,764	6,755
Bleached and semi-bleached softwood	3,743	3,842	3,869	3,890
Bleached and semi-bleached hardwood	2,563	2,681	2,708	2,677
Unbleached	185	188	188	188
All other	14	14	14	14

1. Represents only currently known commitments.
Source: American Paper Institute.

CAPITAL SPENDING SURVEY: 1987-89

Record earnings and big capacity expansion plans fuel big boom in capital spending; no fallout—yet—from stock market crash

By CARL ESPE, News Editor

Pulp and paper companies in both the U.S. and Canada are planning big increases in capital spending, according to *Pulp & Paper*'s annual survey of investment plans, and weakness in the financial markets is unlikely to change the picture unless it spreads to the general economy. On both sides of the border, record earnings and foreign funds attracted by weak domestic currencies will help fund strong growth in spending, according to current plans. New paper machines and pulp mill expansions claim the largest share of planned outlays, reflecting above-average capacity growth plans in both the U.S. and Canada.

The Oct. 19 stock market crash has added a note of uncertainty to the outlook, but capital spending programs won't be affected unless or until the weakness spreads to the economy, companies indicate. Pulp and papermakers have their eyes glued firmly on their businesses, and so far they like what they see: strong demand and higher prices have led to record earnings at many firms, and 1987 ended with operating rates high and inventory at moderate levels. Analysts predict that production will match the slower 1% to 2% growth rate of GNP this year, down from 4% last year, but operating rates should remain strong, and the weak dollar puts producers in a strong low-cost position.

Capital investment in the paper industry is closely tied to profits, and analysts surveyed by *Pulp & Paper* expect, on average, that profits will rise another 20% this year. While the outlook could certainly change, companies appear willing to wait for plainer signs of a downturn before they change their current plans.

P&P's latest investment survey, conducted mostly in November, covers spending plans for the three-year period from 1987 through 1989, as well as longer-range plans. Reported outlays for the period total $8.04 billion in the U.S., up 19.4% from last year's survey. In Canada, companies report plans to spend $6.67 billion for the 1987-89 period, an increase of 47.7% over last year. In both the U.S. and Canada, longer-range investment plans for 1990-92 account for about 24% of these spending totals. The most important single year is 1989 in both countries: about 32% of total reported spending in the U.S., and 39% in Canada, is for projects scheduled to start up in 1989.

Spending forecast for 1988. According to a new survey by Data Resources Inc., capital spending in the U.S. pulp and paper industry will climb to a record $11.58 billion this year—a whopping 24.7% increase over projected 1987 spending of $9.29 billion, which itself is up 5.9% from 1986. A 25% increase would be the largest since 1979, when high inflation helped push spending up 39% over the previous year.

Looking beyond 1988, preliminary plans indicate that spending will fall back to $10.6 billion in 1989, DRI reported. That would be down 8.5% from 1988 but still

TEN-YEAR CAPITAL SPENDING TRENDS ($000)

	U.S. TOTAL		CANADA TOTAL	
1987e	$8,870	1.1%	C$2,532	5.2%
1986	8,770	2.1	2,407	27.4
1985	8,590	19.1	1,890	61.0
1984	7,210	21.8	1,174	17.5
1983	5,920	−0.8	999	−29.6
1982	5,970	−11.2	1,420	−15.3
1981	6,720	−1.2	1,676	61.0
1980	6,800	22.5	1,041	52.0
1979	5,550	39.1	685	33.5
1978	3,990	10.8	513	−1.6

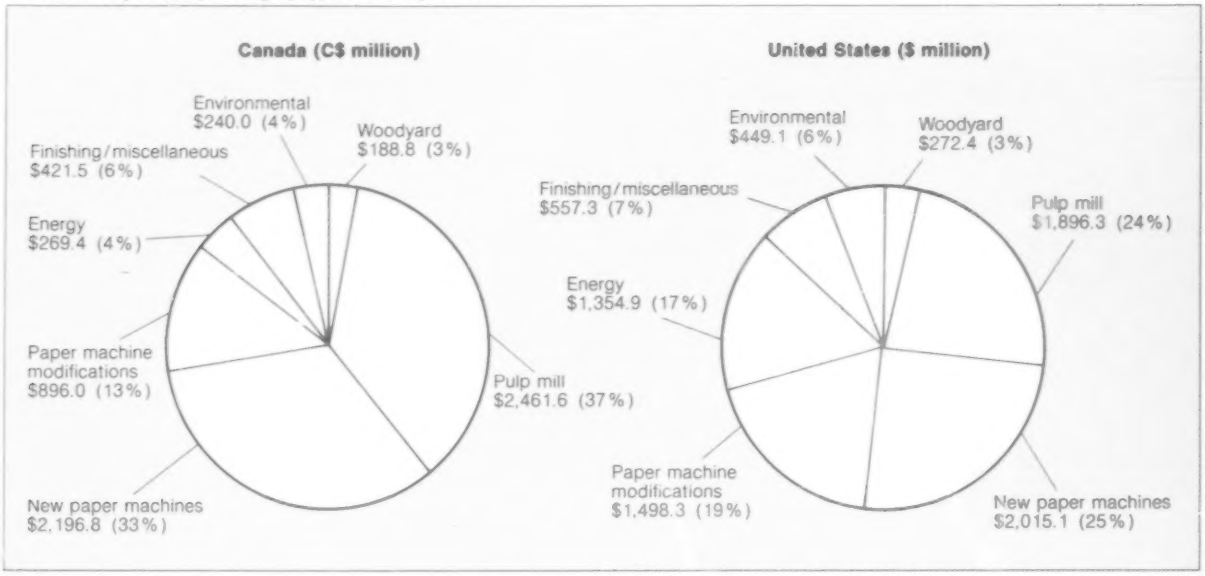
Source: Commerce Dept., Statistics Canada.

TEN-YEAR U.S. ENVIRONMENTAL SPENDING TRENDS ($000)

	AIR		WATER		SOLID WASTE	
1987e	$120	10.1%	$105	31.3%	$93	93.8%
1986	109	−37.7	80	−33.9	48	4.3
1985	175	34.6	121	95.2	46	35.3
1984	130	−12.8	62	−47.5	34	−43.3
1983	149	−30.4	118	45.7	60	160.9
1982	214	78.3	81	−11.0	23	−53.1
1981	120	−36.8	91	−35.0	49	28.9
1980	190	20.3	140	−21.3	38	65.2
1979	158	6.0	178	−2.2	23	−28.1
1978	149	0.7	182	−34.5	32	88.2

Source: National Council of the Paper Industry for Air & Stream Improvement.

FIGURE 1: **Reported spending by type of facility, 1987-89 +.**



U.S.—REPORTED CAPITAL EXPENDITURES FOR 1987-89+ BY REGION AND TYPE OF FACILITY ($000)

PRODUCTION-RELATED EXPENDITURES

	WOOD/FIBER		PULPING		NEW MACHINES		MACHINE MOD.		ENERGY		MISC./PLANT	
New England	$ —	0%	$ 230,700	12%	$ 10,000	0%	$ 310,300	21%	$ 356,700	26%	$ 23,430	4%
Mid-Atlantic	275	0%	25,930	1%	5,000	0%	46,937	3%	80,323	6%	17,830	3%
East North Central	—	0%	75,855	4%	268,000	13%	461,405	31%	79,650	6%	119,886	22%
West North Central	30,000	11%	196,400	10%	440,100	22%	—	0%	62,000	5%	96,000	17%
South Atlantic	25,975	10%	613,755	32%	500,000	25%	414,985	28%	597,700	44%	207,097	37%
East South Central	179,400	66%	244,300	13%	303,000	15%	121,700	8%	141,000	10%	36,800	7%
West South Central	9,750	4%	241,200	13%	285,000	14%	46,000	3%	—	0%	18,780	3%
Mountain/Pacific	27,000	10%	268,194	14%	204,000	10%	96,981	6%	37,550	3%	37,449	7%
Total	**$272,400**		**$1,896,334**		**$2,015,100**		**$1,498,308**		**$ 1,354,923**		**$ 557,272**	

ENVIRONMENTAL QUALITY SPENDING — **TOTALS**

	WATER		AIR		SOLID WASTE		PRODUCTION		ENVIRONMENTAL		GRAND TOTAL	
New England	$ —	0%	$ —	0%	$ 5,400	10%	$ 931,130	12%	$ 5,400	1%	$ 936,530	12%
Mid-Atlantic	4,900	2%	—	0%	500	1%	176,295	2%	5,400	1%	181,695	2%
East North Central	5,460	3%	7,860	4%	5,400	10%	1,004,796	13%	18,720	4%	1,023,516	13%
West North Central	18,035	9%	15,000	8%	4,500	8%	824,500	11%	37,535	8%	862,035	11%
South Atlantic	84,750	41%	65,000	34%	16,850	32%	2,359,512	31%	166,600	37%	2,526,112	31%
East South Central	55,750	27%	68,600	36%	15,000	28%	1,026,200	14%	139,350	31%	1,165,550	14%
West South Central	850	0%	11,200	6%	—	0%	600,730	8%	12,050	3%	612,780	8%
Mountain/Pacific	34,770	17%	23,800	12%	5,450	10%	671,174	9%	64,020	14%	735,194	9%
Total	**$204,515**		**$191,460**		**$53,100**		**$7,594,337**		**$449,075**		**$8,043,412**	

States are assigned to regions as follows:
New England: Maine, Vt., N.H., Conn., R.I., Mass.
Mid-Atlantic: N.Y., N.J., Pa.
East North Central: Wis., Mich., Ill., Ind., Ohio
West North Central: N.Dak., S.Dak., Nebr., Kans., Minn., Iowa, Mo.
South Atlantic: Del., Md., W.Va., Va., N.C., S.C., Ga., Fla.
East South Central: Ky., Tenn., Miss., Ala.
West South Central: Okla., Texas, Ark., La.
Mountain/Pacific: Wash., Ore., Calif., Alaska, Idaho, Nev., Mont., Wyo., Utah, Ariz., Colo., N.Mex.

significantly higher than current spending levels.

Survey results reflect the bullish trend in capital spending that has been evident since last winter. A year ago, the DRI survey forecast that capital spending would total only $5.97 billion in 1987 and that 1988 spending would climb just slightly higher, to $6.09 billion. Both estimates climbed steadily all last year, as paper companies posted big earnings gains and business strengthened in most sectors of the industry. DRI's new estimate of $9.29 billion for 1987 is up 1.9% from its previous estimate of $9.12 billion, made in May.

Spending up again in Canada. After suffering steeper declines in 1982 and 1983 than did their U.S. counterparts, Canadian pulp and paper manufacturers have been more aggressive over the past three years in raising capital expenditures. The latest survey of investment intentions, conducted early last summer by Statistics Canada, showed plans to spend a record C$2.53 billion on capital improvements in 1987, up 34.0% from 1986. As in the U.S., the C$2.53 billion spending mark reflects an upward revision from earlier estimates of about 5%. Construction spending was estimated at $360 million for the year, up 54.6% from 1986, while spending for machinery and equipment totaled $2.17 billion, up 31.2%.

In percentage terms, British Columbia posted the largest gains. Spending in the province was expected to climb 153% in 1987, to C$496 million. Companies planned to spend $1.15 billion in Quebec, up 12.8% from the previous year, and $416 million in Ontario, 25.3% more than in 1986.

ABOUT *P&P*'S ANNUAL SURVEY. Now in its twenty-fourth year, *P&P*'s annual capital spending survey covers expansion and modernization programs at U.S. and Canadian mills. Unlike surveys which track spending by year, the *P&P* survey covers spending by project. Dollar figures represent the total cost of reported projects and may sometimes includes supporting equipment. The total cost of multiyear projects is assigned to the startup year and is not divided among the years of expenditure. Each survey primarily covers a three-year period—the current survey covers 1987-89—but projects with firm startup dates beyond that time frame are also included.

*Complete results of P&P's exclusive survey of North American capital spending programs for 1987-89 are available in a separate **Mill-by-Mill Listings** report. Organized by company, the listings show programs for new mills and machines, rebuilds and modernizations, environmental quality control, and other mill improvements, with specifics on equipment ordered, dates, suppliers, and prices, where available. Subscribers to P&P's monthly newsletter, Project Report, receive a free copy of the report with their January issue. All others may obtain a copy of the report for US$105. To order, send payment to Pulp & Paper, Editorial Dept., 500 Howard St., San Francisco, Calif. 94105.*

UNITED STATES

SPENDING REBOUNDS THANKS TO RECORD EARNINGS AFTER A LACKLUSTER YEAR IN 1986

■ U.S. pulp and paper companies responding to *P&P*'s survey report plans to spend $8.0 billion on capital modernization and expansion projects during the 1987-89 period. That figure is up over 19% from the total reported last year, when a revolutionary new tax bill and uncertain business prospects depressed the capital spending outlook. Despite the recent stock market crash, papermakers remain bullish about capital spending. The main factors in the investment upswing are record earnings at many companies, prospects for continued strong demand, and further competitive advantage from the weak U.S. dollar.

Announced production-related spending totals $7.6 billion in the current survey, up 19% from last year. The largest gain is in pulp mill spending, followed by paper machine rebuild, energy, and woodyard spending. Production spending accounts for 94% of total reported outlays, compared with 95% in last year's survey. Environmental spending is up 29% in the new survey to $449

TOP SPENDERS IN U.S.

Companies which have reported capital spending plans of $100,000,000 or more, including both production and environmental programs

	1987-89	1986-88
Blandin Paper	$344,000,000	n.a.
Boise Cascade*	$257,500,000	$195,000,000
Champion International	308,900,000	389,100,000
Consolidated Papers	169,600,000	271,900,000
Federal Paper Board	193,000,000	266,000,000
Fort Howard Paper*	900,000,000	900,000,000
Gaylord Container	100,000,000	n.a.
Georgia-Pacific	433,000,000	270,000,000
GLFP/Ponderay Newaprint	300,000,000	n.a.
Great Northern Nekoosa*	357,680,000	232,880,000
James River	194,800,000	240,000,000
Mead*	542,000,000	107,000,000
Midtec Paper	261,000,000	19,810,000
Newsprint South	320,000,000	n.a.
Pentair	657,600,000	637,500,000
Potlatch	197,500,000	178,000,000
Scott Paper	191,000,000	331,000,000
Southeast Paper Mfg.	300,000,000	n.a.
Stone Container	143,848,000	150,141,000
Temple-Inland	259,425,000	n.a.
Union Camp	188,000,000	131,000,000
Westvaco*	200,000,000	180,000,000
Weyerhaeuser Paper	103,400,000	63,000,000

* Includes programs for completion beyond three-year period indicated.

MAJOR MODERNIZATION/ EXPANSION PROJECTS IN U.S.

(over $50,000,000 at an existing mill site)

	1987-89
Appleton Papers, West Carrollton, Ohio	$ 61,000,000[2]
Blandin Paper, Grand Rapids, Minn.	344,000,000[1]
Boise Cascade, Rumford, Maine	194,500,000[2]
Boise Cascade, Sheldon Springs, Vt.	50,000,000
Champion International, Pensacola, Fla.	170,000,000
Champion International, Bucksport, Maine	108,900,000
Erving Paper Mills, Erving, Mass.	55,000,000
Federal Paper Board, Augusta, Ga.	132,150,000
Fraser, Madawaska, Maine	72,700,000
Gaylord Container, Bogalusa, La.	100,000,000[1]
Georgia-Pacific, Palatka, Fla.	70,000,000[1]
Georgia-Pacific, Zachary, La.	285,000,000[1]
Georgia-Pacific, Woodland, Maine	78,000,000[1]
P.H. Glatfelter, Spring Grove, Pa.	56,000,000
GNN/Nekoosa, Ashdown, Ark.	99,500,000
GNN/Great Northern, E.Millinocket, Maine	195,000,000
James River, Wauna, Ore.	119,800,000[1]
Longview Fibre, Longview, Wash.	92,000,000
Midtec Paper, Kimberly, Wis.	250,000,000[1]
Pentair/Port Huron, Port Huron, Mich.	70,000,000
Pentair/NOW, Niagara, Wis.	74,500,000
Pentair/Flambeau, Park Falls, Wis.	59,100,000[2]
Potlatch, Lewiston, Idaho	94,500,000
Potlatch, Cloquet, Minn.	103,000,000[1]
Scott Paper/S.D. Warren, Westbrook, Maine	70,000,000
Scott Paper/S.D. Warren, Muskegon, Mich.	120,000,000
Southeast Paper Mfg., Dublin, Ga.	300,000,000[1]
Stone Container, Florence, S.C.	104,010,000
Temple-Inland, Krannert, Ga.	170,000,000
Temple-Inland, Orange, Texas	60,000,000
Union Camp, Montgomery, Ala.	188,000,000
Westvaco, Luke, Md.	200,000,000[2]

1. Includes new paper machine.
2. Includes programs for completion in 1990 or later.

U.S. GREENFIELD MILL PROJECTS

STARTED UP IN 1987

Fort Howard, Rincon, Ga. — **1987**
Recycled tissue mill with first of four paper machines

Pentair/Lake Superior, Duluth, Minn. — **1987**
243,000-tpy clay filled supercalendered groundwood mill

UNDER ACTIVE CONSIDERATION OR ANNOUNCED WITH STARTUP DATE

GLFP/Ponderay Newsprint, Usk, Wash. — **1990**
180,000-metric-tpy TMP/newsprint mill

Newsprint South, Grenada, Miss. — **1989**
225,000-tpy TMP/newsprint mill

Mead, Mahrt, Ala. — **1991**
420,000-tpy coated natural kraft paperboard mill

PROPOSED (NO STARTUP DATE)

Augusta Kraft, Augusta, Ga.
Proposed kraft linerboard mill; on hold

Kenaf International, South Texas
Proposed kenaf newsprint mill under study

Westbrook Wood Products, Medford, Ore.
TMP/newsprint mill under study

million, the first gain since 1982. Spending for environmental controls at new paper mills accounts for most of the improvement. Planned expenditures amount to $205 million for water pollution control, up 33% from last year, and $191 million for air pollution abatement, an increase of 27%. Solid waste improvements for 1987-89 total $53 million, up 24% from last year's survey.

Spending up in every area. The strongest growth is in pulp mill spending, which is about 70% higher in this year's survey than last year. Mills report plans to spend an estimated $1.9 billion on pulp mill expansion and modernizaton projects over the 1987-89 period, up from about $1.1 billion for 1986-88. Pulp mill projects account for 24% of announced spending plans in the current survey, up from only 16% last year.

Capacity expansion is the driving force behind the growth in pulp mill spending. Despite the 70% increase, however, current pulp mill spending plans represent more of a return to normal than a big surge in spending. According to the American Paper Institute, mills expect to add about 1.9% a year to total woodpulp capacity over the next three years, or 3.6 million tpy. That's about double the amount of pulp capacity growth reported to API last year, but it is still slightly behind the ten-year average growth rate of 2.0%.

Most of the activity currently under consideration will be in integrated mills. Market pulp expansion will continue to be severely limited, with growth averaging only 1.1% a year through 1990, API reports. That compares with a ten-year historical growth rate of 4.1% a year. The two largest kraft market pulp projects under way currently are at Georgia-Pacific Corp.'s Port Hudson mill in Zachary, La., and Nekoosa Paper Corp.'s Ashdown, Ark., facility.

Mechanical pulp spending will get a boost from two greenfield newsprint mills, planned by Newsprint South Inc. and Ponderay Newsprint Co., and a major mill modernization at Blandin Paper Co.'s Grand Rapids, Minn., mill. All three projects are scheduled for completion in 1989.

Plans for power plant spending climb almost 18% in the current survey to $1.4 billion. Energy-related projects account for about 17% of overall spending reported for the 1987-89 period.

Despite a big jump in the number of cogeneration projects planned or under way, new power boiler installations and energy-related improvement programs continue to lag behind the pace set in the early- to mid-1980s. The main factor has been lower prices for oil and natural gas, which have caused the postponement of several projects. Two recent casualties are proposed cogeneration plants at Federal Paper Board's Sprague, Conn., mill and Erving Paper Mills' Erving, Mass., mill. Both projects have been postponed because of lower oil prices, although Federal may decide later this year to proceed with a smaller installation than the 69-MW plant originally planned.

Even with these postponements, however, the cogeneration area remains fertile ground for spending. At least 17 new plants are currently planned for the 1987-89 period, and several others remain on the drawing board. The two most recent announcements are from Boise Cascade Corp., which plans to install a 75-MW power plant at Rumford, Maine, and Southeast Paper Manufacturing Co., which will install a power plant as part of a large-scale newsprint expansion at Dublin, Ga.

Announced spending for paper machine rebuilds and modifications in the 1987-89 period totals $1.5 billion, up 18% from last year's survey. Spending in this category has risen steadily in recent years and now accounts for about 19% of total outlays, up from 13% in 1985 and only 6% in 1983.

Paper machine upgrades have had a major role in the industry's modernization efforts since the current economic expansion began in 1982, particularly in the areas of cost cutting, product improvement, and grade realignment. An important trend that has emerged more recently is incremental capacity expansion through machine rebuilds, especially in linerboard. API reports that 14 linerboard machine rebuilds adding 50,000 tpy or more are planned for the 1988-90 period.

NEW MILLS AND MACHINES. At 25% of the total, new paper machines will consume the largest percentage of announced total spending for the 1987-89 period, according to *P&P*'s new survey. Outlays for new paper machines will top the $2.0 billion mark, up 12% from last year's survey.

Capacity expansion, more than any other area, marks the renewed vitality and optimism in capital spending plans. As of this time last year, nine new paper machines had started up in the previous year, 1986, and only two new paper machines and two new paper mills were on the horizon. In the subsequent 12 months, six new paper machines and three new paper mills have been approved for startup by 1989, four others have been tentatively approved for the early 1990s, and announcements are expected early this year on one or two others.

According to API's recent survey of capacity expansion plans, U.S. mills plan to add 6.1 million tpy of new capacity from 1988 through 1990, or 2.5% a year. Last year's three-year growth forecast averaged only 1.9% a year. Kraft paperboard, free-sheet papers, and newsprint are largely responsible for the increase. Newsprint capacity will rise sharply in 1990 after eight years in the doldrums, thanks to two greenfield mills approved for startup in 1989 at Ponderay Newsprint Co. in Usk, Wash., and Newsprint South Inc. in Grenada, Miss. Unbleached kraft paperboard will get a big boost from Mead's new 420,000-tpy natural kraft boxboard mill to be built in Mahrt, Ala.

Two new paper mills came online in 1987. Lake Superior Paper Industries, a joint venture of Pentair Inc. and Minnesota Power & Light Co., started up a new 243,000-tpy supercalendered groundwood paper mill in Duluth, Minn. And Fort Howard Corp. started up the first of four recycled tissue machines at its new mill in Rincon, Ga.

A second recycled tissue machine will come online at Rincon this year, raising capacity to about 500 tpd, and

NEW PAPER MACHINES IN U.S. AT EXISTING SITES

STARTED UP IN 1987

Linweave Fine Papers, Holyoke, Mass. — 1987
25,000-tpy machine—fine paper

UNDER CONSTRUCTION OR ANNOUNCED WITH STARTUP DATE

Fort Howard Paper, Rincon, Ga. — 1988
250-tpd machine—recycled tissue

Georgia-Pacific, Palatka, Fla. — 1988
210-in.-trim No. 5 Beloit—tissue

Georgia-Pacific, Zachary, La. — 1988
825-tpd, 348-in. Valmet—uncoated free-sheet

James River, Wauna, Ore. — 1988
70,000-tpy, 276-in. machine—tissue

Midtec Paper, Kimberly, Wis. — 1988
205,000-tpy, 222-in.-trim Voith; replaces four-coated free-sheet

Potlatch, Cloquet, Minn. — 1988
194-in.-trim Voith—coated free-sheet

Blandin Paper, Grand Rapids, Minn. — 1988
254,000-tpy, 306-in.-trim machine, replacing one—LWC

Gaylord Containers, Bogalusa, La. — 1988
1,000-tpy kraft linerboard machine

Southeast Paper Manufacturing, Dublin, Ga. — 1989
210,000-tpy, 358-in. Valmet—newsprint

Fort Howard, Rincon, Ga. — 1990-92
Two additional tissue machines

PROPOSED (NO STARTUP DATE)

Atlas Paper Mills, Hialeah, Fla.
Second recycled tissue machine; in preliminary planning stage

Bear Island Paper, Ashland, Va.
200,000-metric-tpy newsprint machine under consideration

Champion International, Quinnesec, Mich.
Coated free-sheet machine under study; decision expected soon

Chesapeake, Menasha, Wis.
No. 4 tissue machine proposed

Great Northern Nekoosa, Ashdown, Ark.
210,000-tpy No. 64 uncoated free-sheet machine under study

International Paper, Undetermined
Plans new coated free-sheet machine in early 1990s

International Paper, U.S. South
Studying uncoated free-sheet machine; early 1990s target

James River, Unspecified
Two new tissue machines planned for 1989-94 period

Jefferson Smurfit, Newberg, Ore.
275,000-tpy machine in preliminary engineering stage—newsprint

Union Camp, Eastover, S.C.
Considering second free-sheet machine

Westvaco, Wickliffe, Ky.
New free-sheet machine under study

Willamette Industries, Hawesville, Ky.
Reportedly studying uncoated free-sheet machine

two more machines are planned for the early 1990s. Also in the tissue sector, Georgia-Pacific will start up its new No. 5 tissue machine at Palatka, Fla., this month, and James River will complete a new 70,000-tpy tissue unit at its Wauna, Ore., mill later in the year.

Georgia-Pacific plans to start up an 825-tpd uncoated free-sheet machine, which is reputedly the largest in North America, at its Port Hudson mill in late 1988. Two coated free-sheet machines are also scheduled for start-up this year. Potlatch Corp. will replace three old uncoated free-sheet units with a new coated free-sheet machine at Cloquet, Minn. And Midtec Paper Corp. will replace four older coated free-sheet machines with a new 205,000-tpy unit at Kimberly, Wis.

In 1989, Gaylord Container Corp. will complete a new 1,000-tpd linerboard machine, the first to be installed since 1985. Also in 1989, Southeast Paper will start up a new 210,000-tpy recycled newsprint machine at Dublin, Ga., and Blandin will complete its new lightweight coated groundwood machine installation at Grand Rapids, Minn. The 254,000-tpy Blandin machine will replace one older unit.

More machines on the horizon? As was the case last year, several paper machine proposals are poised to move ahead quickly if market conditions warrant. In newsprint, Bear Island Paper Co. is studying a 200,000-metric-tpy newsprint machine for its Ashland, Va., mill, and Jefferson Smurfit Corp. is eyeing a new 275,000-tpy unit for Newberg, Ore. International Paper Co. is studying two new paper machines for startup in the early 1990s at unspecified locations. One would produce coated and the other uncoated free-sheet. New free-sheet paper machines are also under consideration at Union Camp, Westvaco, and Willamette.

CANADA

EXPANSION PLANS HEAT UP AGAIN; FOREIGN MONEY COULD SEND SPENDING EVEN HIGHER

■ Canadian pulp and paper producers plan even larger increases in capital investment over the next few years than do their U.S. counterparts, P&P's survey shows. Companies report total outlays of C$6.7 billion for the 1987-89 period, an increase of 48% over last year. As in the U.S., capital spending will benefit from renewed interest in capacity expansion, and continued strong earnings will help fuel more ambitious spending programs.

Another factor is foreign investment, which has been attracted to Canada by the weakness of the Canadian dollar. Daishowa of Japan, for example, said recently that it is considering plans to spend up to $1 billion on new capacity in Alberta and British Columbia.

Production-related spending totals $6.4 billion for the 1987-89 period, up 49% from last year's total. Companies report environmental spending plans totaling $240 million, an increase of 14% from a year ago.

Spending by category. Spending is up in every process area except energy, with the strongest growth in outlays for new paper machines. Planned expenditures for new paper machines have more than doubled since last year, rising 107% to $2.2 billion, with eight new machines announced over the past 12 months.

Companies report plans to spend $896 millon on paper machine rebuilds in the 1987-89 period, a gain of 19% over last year's plans. This is the first increase in several years for paper machine rebuilds, which fell

CANADA—REPORTED CAPITAL EXPENDITURES FOR 1987-89+ BY REGION AND TYPE OF FACILITY (C$000)

PRODUCTION-RELATED EXPENDITURES

	WOOD/FIBER		PULPING		NEW MACHINES		MACHINE MOD.		ENERGY		MISC./PLANT	
Maritimes	C$ 31,415	17%	C$ 121,734	5%	C$ 94,300	4%	C$111,700	12%	C$ 23,000	9%	C$ 1,085	0%
Quebec	22,342	12%	1,157,204	47%	1,044,000	48%	533,046	59%	90,680	34%	244,131	58%
Ontario	24,475	13%	216,740	9%	537,000	24%	165,258	18%	28,015	10%	107,532	26%
Central	600	0%	12,400	1%	190,500	9%	1,500	0%	—	0%	—	0%
West	109,983	58%	953,559	39%	331,000	15%	84,508	9%	127,661	47%	68,748	16%
Total	**C$186,815**		**C$2,461,637**		**C$2,196,800**		**C$896,012**		**C$269,356**		**C$421,496**	

ENVIRONMENTAL QUALITY SPENDING — **TOTALS**

	WATER		AIR		SOLID WASTE		PRODUCTION		ENVIRONMENTAL		GRAND TOTAL	
Maritimes	C$ 9,000	8%	C$ 11,320	11%	C$ 1,400	7%	C$ 383,234	6%	C$ 21,720	9%	C$ 404,954	6%
Quebec	54,796	48%	32,904	32%	9,105	43%	3,091,403	48%	96,805	40%	3,188,208	48%
Ontario	8,754	8%	3,507	3%	5,360	25%	1,079,020	17%	17,621	7%	1,096,641	16%
Central	—	0%	—	0%	—	0%	205,000	3%	—	0%	205,000	3%
West	42,670	37%	55,785	54%	5,350	25%	1,675,459	26%	103,805	43%	1,779,264	27%
Total	**C$115,220**		**C$103,516**		**C$21,215**		**C$6,434,116**		**C$239,951**		**C$6,674,067**	

Provinces are assigned to regions as follows: Maritimes: New Brunswick, Newfoundland, Nova Scotia; Central: Manitoba, Saskatchewan; West: British Columbia, Alberta.

18% last year and 21% the year before.

Pulp mill spending gets a boost in the current survey period from two greenfield mechanical pulp installations and a number of new improvement projects at both chemical and mechanical pulp facilities. Reported spending for 1987-89 totals $2.5 billion, up 53% from last year's survey. Spending for woodyard improvements is up 24%, to $189 million.

The energy sector is the only process area not posting large gains for the 1987-89 period. Total outlays are reported at $269 million, virtually the same as last year.

Capacity growth still high. Capacity expansion plans picked up sharply in Canada in 1986, about a year before the U.S, helping to fuel the current growth in capital spending. That pattern appears likely to continue, according to the Canadian Pulp & Paper Assn.'s 1987 survey of expansion plans. Paper and paperboard capacity will grow an average of 2.9% a year between 1987 and 1989, CPPA reported. That's 93% above the ten-year average rate of 1.5% a year for 1977-86.

Newsprint heats up. Last summer, CPPA reported that newsprint capacity would grow a modest 275,000 tpy over the 1987-89 period, or 2.8%. Since then, however, two new paper machines have been approved for startup in 1989, raising the growth forecast to 721,000 tpy, an increase of 7.3%.

CIP will build a new $323-million CTMP/newsprint mill with capacity for 230,000 tpy at a site adjacent to its Tahsis Co. Ltd. market kraft pulp mill in Gold River, B.C. In the other project, Finlay Forest Industries Ltd. will integrate its 450-tpd refiner-mechanical market pulp mill at Mackenzie, B.C., with a new 216,000-tpy newsprint machine.

Looking beyond the current survey period, Great Lakes Forest Products has announced plans to install a new 240,000-tpy newsprint machine at its Thunder Bay, Ont., mill in 1991. The new unit will replace two older machines, adding 60,000 tpy to net capacity.

Printing/writing papers flying high. Groundwood specialty and printing papers will register the strongest growth among the paper grades, rising 46% by 1989, according to CPPA. Conversions to supercalendered paper at Abitibi-Price's Alma and Jonquière, Que., mills are the main factors in the 580,000-tpy increase, along with a new supercalendered paper machine at St. Marys Paper Inc. in Sault Ste. Marie, Ont.

Looking beyond 1989, Consolidated-Bathurst Inc. has announced plans to install a new 183,000-tpy groundwood specialties machine at its Grand'Mere, Que., mill in 1990, replacing two older units. Donohue is trying to secure government financial help to build a 210,000-tpy SC paper mill in Matane, Que.—a project that was abandoned last year by Saugbrugsforeningen of Norway.

Four new uncoated free-sheet paper machines are planned for the 1987-89 period, adding 53% to capacity for book, writing and miscellaneous paper. Domtar Inc. started up the first of two new 175,000-tpy paper ma-

TOP SPENDERS IN CANADA

Companies which report capital spending plans of C$100,000,000 or more, including both production and environmental programs

	1987-89	1986-88
Abitibi-Price*	C$288,500,000	C$213,700,000
Cascades	125,000,000	91,000,000
Champion International	285,000,000	3,000,000
CIP	566,500,000	128,200,000
Consolidated-Bathurst*	575,500,000	238,900,000
Crestbrook Forest Industries*	109,695,000	30,480,000
Domtar	934,818,000	531,208,000
Donohue	200,500,000	170,000,000
E.B. Eddy Forest Products*	280,815,000	205,526,000
Fibreco Export	170,000,000	170,000,000
Finlay Forest Industries	198,000,000	n.a.
Great Lakes Forest Products*	392,000,000	19,500,000
Kruger*	270,000,000	258,600,000
MacMillan Bloedel	126,000,000	16,000,000
Millar Western Pulp	200,000,000	185,000,000
Ontario Paper*	479,312,000	208,600,000
Reed	146,000,000	68,800,000
St. Marys Paper	145,000,000	19,000,000
Tembec*	269,952,000	103,000,000
Weyerhaeuser Canada	202,500,000	202,500,000

*Includes programs for completion beyond three-year period indicated.

MAJOR MODERNIZATION/ EXPANSION PROJECTS IN CANADA

(over C$50,000,000 at an existing mill site)

	1987-89
Abitibi-Price, Thunder Bay, Ont.	C$ 55,000,000
Abitibi-Price, Chandler, Que.	113,000,000[2]
Abitibi-Price, Jonquière, Que.	95,000,000
Canfor, Port Mellon, B.C.	93,770,000[2]
Cascades, Port Cartier, Que.	90,000,000
Champion International, Hinton, Alta.	285,000,000
CIP, Gatineau, Que.	102,000,000[1]
CIP, La Tuque, Que.	62,000,000
Consolidated-Bathurst, Bathurst, N.B.	94,300,000[1]
Consolidated-Bathurst, Grand'Mere, Que.	292,000,000[1,2]
Consolidated-Bathurst, Shawinigan, Que.	81,600,000
Crestbrook, Skookumchuck, B.C.	109,695,000[2]
Crown Forest Industries, Elk Falls, B.C.	55,000,000
Domtar, Dolbeau, Que.	83,820,000
Domtar, Windsor, Que.	785,900,000[1,2]
Donohue, Clermont, Que.	189,500,000[1]
E.B. Eddy Forest Products, Espanola, Ont.	168,496,000[2]
E.B. Eddy Forest Products, Ottawa-Hull, Que.	112,317,000[2]
Finlay Forest Industries, Mackenzie, B.C.	198,000,000[1]
Great Lakes Forest Products, Dryden, Ont.	196,130,000[1]
Great Lakes Forest Products, Thunder Bay, Ont.	276,880,000[1,2]
Kruger, Corner Brook, Nfld.	200,000,000[2]
Kruger, Bromptonville, Que.	70,000,000[2]
MacMillan Bloedel, Powell River, B.C.	76,000,000
Ontario Paper, Baie Comeau, Que.	343,943,000[2]
Ontario Paper, Thoroid, Ont.	185,369,000[2]
Quesnel River Pulp, Quesnel, B.C.	80,000,000
Reed, Quebec City, Que.	146,000,000
Repap Enterprises, Prince Rupert, B.C.	60,000,000
St. Marys Paper, Sault Ste. Marie, Ont.	145,000,000[1]
Soucy, Rivière du Loup, Que.	57,300,000[2]
Tembec, Temiscaming, Que.	269,952,000[1,2]
Weyerhaeuser Canada, Prince Albert, Sask.	202,500,000[1]

1. Includes new paper machine.
2. Includes programs for completion in 1989 and later.

chines late last year at its Windsor, Que., mill. The second machine is due for startup in 1989. Weyerhaeuser Canada Ltd. is integrating its market bleached kraft pulp mill at Prince Albert, Sask., with a new 220,000-tpy uncoated free-sheet machine targeted for startup in 1989.

REPORTED CANADIAN EXPENDITURES BY PROVINCE, 1987-89[1] (C$000)

	PRODUCTION	ENVIRON-MENTAL	TOTAL
Alberta	C$460,000	C$25,000	**C$ 485,000**
British Columbia	1,215,459	78,805	**1,294,264**
Manitoba	2,500	—	**2,500**
New Brunswick	121,500	2,000	**123,500**
Newfoundland	214,500	15,000	**229,500**
Nova Scotia	47,234	4,720	**51,954**
Ontario	1,079,020	17,621	**1,096,641**
Quebec	3,091,403	96,805	**3,188,208**
Saskatchewan	202,500	—	**202,500**
Total	**C$6,434,116**	**C$239,951**	**C$6,674,067**

1. Includes projects, as announced, to be completed in 1990 and later.

NEW PAPER MACHINES IN CANADA AT EXISTING MILL SITES
(metric tons)

STARTED UP IN 1987 — **Startup**

CIP, Gatineau, Que. — **1987**
175,000-tpy, 259-in.-trim Voith—newsprint

Domtar, Windsor, Que. — **1987**
175,000-tpy, 330-in. Beloit—uncoated free-sheet

Donohue, Clermont, Que. — **1987**
180,000-tpy, 330-in.-trim Valmet-Dominion—newsprint

UNDER CONSTRUCTION OR ANNOUNCED WITH STARTUP DATE

Consolidated-Bathurst, Bathurst, N.B. — **1988**
150,000-tpy machine, replacing two—corrugating medium

St. Marys Paper, Sault Ste. Marie, Ont. — **1988**
140-tpd, 184-in.-trim Tampella—SC groundwood

Domtar, Windsor, Que. — **1989**
175,000-tpy, 330-in. Beloit—uncoated free-sheet

Finlay Forest Industries, Mackenzie, B.C. — **1989**
216,000-tpy, 303-in.-trim Voith—newsprint

Great Lakes Forest Products, Dryden, Ont. — **1989**
175,000-tpy, 285-in.-trim—uncoated free-sheet

Weyerhaeuser Canada, Prince Albert, Sask. — **1989**
220,000-tpy, 318-in.—uncoated free-sheet

Consolidated-Bathurst, Grand'Mere, Que. — **1990**
183,000-tpy unit, replacing two—groundwood specialties

Tembec, Temiscaming, Que. — **1990**
110,000-tpy, three-wire machine—bleached paperboard

Great Lakes Forest Products, Thunder Bay, Ont. — **1991**
240,000-tpy machine, replacing two—newsprint

PROPOSED (NO STARTUP DATE)

Abitibi-Price, Iroquois Falls, Ont.
Proposed newsprint machine; timing not decided

Normick Perron, Amos, Que.
Proposed second newsprint machine

Great Lakes Forest Products will also start up a new machine next year, a 175,000-tpy unit at Dryden, Ont.

Market CTMP leads pulp growth. The strongest growth in the market pulp arena is in mechanical pulp, both TMP and CTMP. These grades, which account for only 7% of Canadian market pulp capacity, are expected to grow 66% by 1989, adding 391,000 tpy to capacity.

Construction is well under way on two new market bleached CTMP mills scheduled for startup later this year: Millar Western Pulp Ltd. at Whitecourt, Alta., and Fibreco Export Inc. at Taylor, B.C. Interest in this area remains high, with at least two other mills under study in British Columbia and one in Quebec. Activity has picked up somewhat in the bleached kraft market pulp sector, but capacity growth continues to be offset by integration of existing facilities, such as Weyerhaeuser's Prince Albert, Sask., mill. Kraft market pulp capacity is expected to grow 4.4%, or 303,000 tpy, by 1989.

Last year, Champion International approved a $285-million modernization and expansion program that will add 210,000 tpy to capacity at its Hinton, Alta., mill. Also in Alberta, Daishowa Paper is conducting a final feasibility study for a new 340,000-tpy bleached hardwood kraft market pulp mill in Peace River. Cost of the project would be $500 million. ■

GREENFIELD MILLS—CANADA
(metric tons)

UNDER CONSTRUCTION OR ANNOUNCED WITH STARTUP DATE

Fibreco Export, Taylor, B.C. — **1988**
180,000-tpy, two-line market bleached CTMP mill

Millar Western Pulp, Whitecourt, Alta. — **1988**
210,000-tpy, two-line market bleached CTMP mill

CIP/Tahsis, Gold River, B.C. — **1989**
230,000-metric-tpy newsprint mill with one Beloit Bel Bala III machine and CTMP furnish; adjacent to market pulp mill

PROPOSED (NO STARTUP DATE)

Daishowa Paper, Peace River, Alta.
Conducting final feasibility study for 340,000-metric-tpy bleached hardwood (aspen) kraft market pulp mill

Dong Bang Chemical Co., Ocean Falls, B.C.
Studying 82,500-tpy neutral sulfite anthraquinone market pulp mill

Donohue, Matane, Que.
Proposed 210,000-tpy supercalendered groundwork paper mill

Louisiana-Pacific, Chetwynd, B.C.
Proposed 115,000-tpy CTMP mill and waferboard plant

Makin Pulp & Paper, Britannia Beach, B.C.
135,000-tpy coated and uncoated publication papers mill with one free-sheet and one groundwood machine

Nouvelle Chapelle-Darblay, Rivière-du-Loup, Que.
Studying 175,000-metric-tpy coated paper mill with one paper machine, TMP furnish

Tembec, Val d'Or, Que.
Studying feasibility of 100,000-tpy bleached CTMP mill

Unidentified group, Whitecourt, Alta.
Newsprint mill proposed by unidentified publisher group

West Fraser Mills, Bond Siding, B.C.
Proposed CTMP mill